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ORIGINAL COMMUNICATIONS.

THE EFFECT OF THE INTERNAL SECRETIONS ON THE VOLUME OF THE PANCREAS.[1]

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We have studied the action of infusions of the various dried glands upon the volume of the pancreas. The animals used were cats, well etherized. The filtered infusions were injected per jugular. For a pancreatic oncometer, Dr. Scott made a capsule of

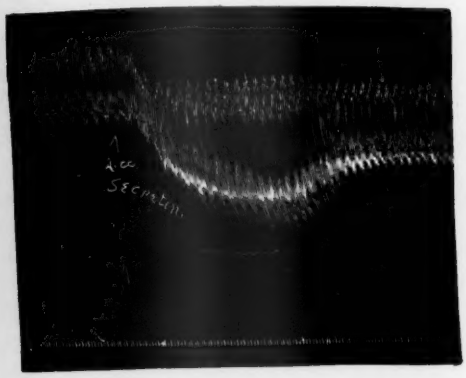

FIG. 1.—Cat. Effect of 2 Cc. of secretin solution upon volume of pancreas. Top line, blood-pressure; next line, volume curve; base line, markings every four seconds.

thin copper with an opening for the arteries and veins of the pancreas and its attachments. Each half of the capsule was held together by a thread through little openings at the sides of the capsule, which kept the halves together. The open spaces where the blood-vessels, nerves, and ligaments entered the capsule were filled with vaselin and cotton so that the capsule was air-tight. A little copper tube on the side of the capsule was connected by rubber tubing with a modified piston recorder. Then the abdomen was closed, except a small space where the rubber tube emerged. After waiting some time for the shock of traumatism to pass off, the volume recorder of the pancreas was permitted to register on a smoked drum. After a short period we injected a filtered infusion of the dried gland, and noted the effect upon the volume of the pancreas; the carotid pressure and pulse were registered with Huerthle's manometer.

Infundibulin (pituitrin of Parke, Davis & Co., hypophysin of Führer) in doses of 0.6 Cc. caused a decrease for three minutes and then a marked increase in the volume of the pancreas. At the same time the blood-pressure, after a momentary fall, was rising, the pulse being momentarily slower, after which it became normal.

Adrenalin (.06 Cc.) produced a decrease in the volume for 3⅓ minutes, and then increased it; the blood-pressure was increased and the pulse-rate was faster.

An infusion of pineal gland (.06 gramme) increased the volume of the pancreas; the pressure remained about the same, and the pulse-rate slightly slower.

Infusion of the thyroid (.06 gramme)

[1] These experiments were made before the recent judicial decision in Pennsylvania.

for the moment decreased the volume and then increased it. The pressure fell for a minute and then returned to normal. The pulse-rate was unchanged.

Iodothyrin (.06 gramme) also increased

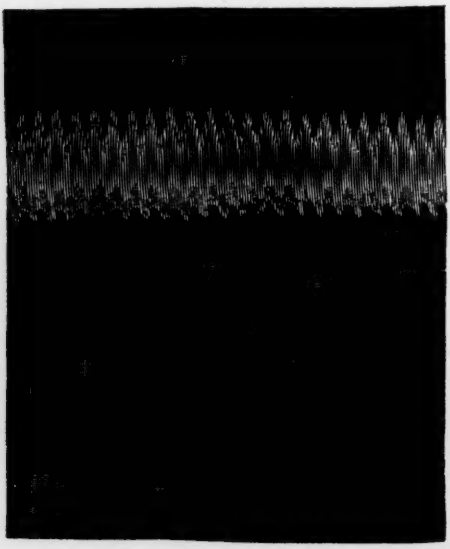

FIG. 2.—Five minutes after Fig. 1, showing great increase in volume of the pancreas from secretin.

the volume. Iodothyrin lowered the blood-pressure and then increased it. The pulse-rate was increased.

Thymus (.015 gramme) lowered blood-

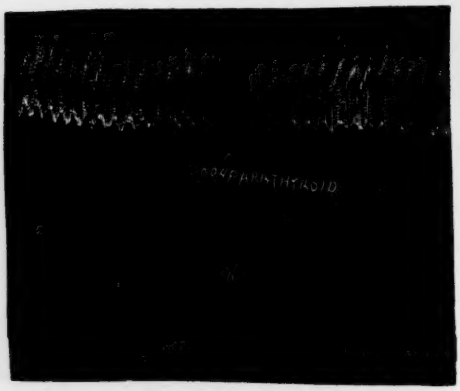

FIG. 3.—Cat's pancreas. Lowest line, markings every four seconds; top line, blood-pressure and pulse curve; middle line, volume of pancreas from infusion of parathyroid.

pressure but did not alter pulse-rate. It increased the pancreatic volume.

Secretin solution (5 Cc.) decreased the arterial tension for a short time and then increased it. It did not alter the pulse. It increased the pancreatic volume to a very marked extent (Figs. 1 and 2).

The infusion of the renal cortex (.06 gramme) decreased momentarily the blood-pressure, but increased the volume of the pancreas to a considerable extent.

Infusion of the prostate, spleen, and orchitic extract had no effect upon the volume of the gland.

Infusion of the tonsil (.06 gramme) decreased blood-pressure for a short time, but caused a marked increase in pancreatic volume.

Infusion of the mammary gland de-

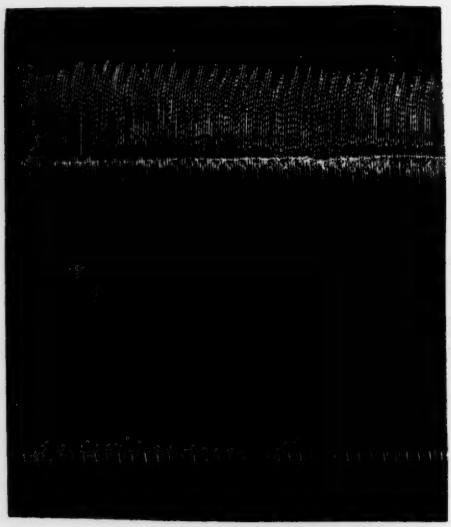

FIG. 4.—Continuation of Fig. 3. Ten minutes afterwards the line of the volume curve has run into the blood-pressure curve, showing a great increase in volume of the pancreas from infusion of parathyroid.

creased blood-pressure for a short time, but caused a marked increase in the volume of the pancreas.

Parathyroid (.004 gramme) infusion decreased blood-pressure for a short time, also decreased pancreatic volume for a short period, and then greatly increased it, the effect lasting ten minutes (Figs. 3 and 4). It did not alter the pulse-rate.

Infusion of corpus luteum (.015 gramme) decreased blood-pressure momentarily and increased the volume of the pancreas. It

decreased the pulse-rate for a few minutes and then increased it.

Agents which increase the size of the pancreas to a marked degree:	Agents which had a slight effect:	Agents which had no effect:
Parathyroid. Secretin. Mammary. Renal cortex. Infundibulin } Primary Adrenalin } decrease. Pineal. Tonsil.	Thyroid. Thymus. Corpus luteum.	Spleen. Prostate. Orchitic extract.

When secretin is injected per jugular it requires about a minute until the pancreatic juice commences to flow from the cannula, which corresponds about to the time we have the greatest vascularity of the gland. Ocular inspection during digestion reveals a gland full of blood. This means that the activity of the pancreatic cells causes more blood to be sent to them to produce a secretion, and not that the vascularity is the cause of the increased flow of the juice.

Parathyroid infusion greatly increases the volume of the gland—in fact it causes a greater increase than any other agent, not excepting secretin. The recording pen of the pancreatic oncometer runs into the blood-pressure line. Now infusion of parathyroid has hardly any effect upon the pulse or carotid pressure, so that it seems unexpectedly to have a marked action upon the pancreatic circulation, filling the blood-vessels of the gland to a marked extent—for some time a vasodilation.

A SUMMER SERVICE IN A SKIN CLINIC.[1]

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With apologies to Dr. Chas. J. White, of Harvard University, for the above title, I determined to follow his excellent example and publish the record of the more common diseases of the skin seen during my service extending from June 1 to November 1. The wealth of material to be found was recently compiled by my associate, Dr. M. Scholtz, as herewith given:

Common diseases seen and given in the order of frequency: Eczema, comprising about 25 per cent; syphilis, about 20 per cent; impetigo, about 9 per cent; scabies, about 7 per cent; ringworm, about 2 per cent; and psoriasis, about 2 per cent of the total number of cases.

Not only the common diesases but a few of the rarer ones presented themselves. The individual case will not be recorded. Grouping the various dermatoses and dwelling principally upon the diagnosis and treatment will save time, and it is to be hoped add interest to what is often erroneously thought to be an uninteresting subject. In nearly every college dispensary for skin diseases eczema and syphilis lead in the number of cases seen. A type of eczema commonly observed is the so-called "trade eczema" found most often in those whose occupation necessitates the excessive use of water and strong soap, or the use of chemical irritants, and perhaps associated with exposure to the elements, the sun, or the cold winds of winter. The resisting power of the skin is lowered and is finally overcome, and a vesicular, papulovesicular, or a scaly or a fissured eczema results. The hands and the forearms are commonly involved. After some months in a busy clinic these cases are generally easily recognized.

It may occasionally be difficult at once to make a positive diagnosis between some cases of eczema and dermatitis. Inflammation of the skin of artificial origin is often similar in symtomatology to that of eczema, but there is some underlying metabolic disturbance in every case of eczema, consequently we may be unable to determine offhand if the condition is a true eczema or a dermatitis resulting from irritation incident to occupation. At the first visit the

[1]Read before the West End Medical Society, Cincinnati, May 12, 1914.

only questions asked the patient are regarding the duration of the condition and if he had previous attacks. We then observe what part is involved. This is so important in ruling out other skin diseases that special stress on this point is insisted upon; also note whether or not the eruption is characterized principally by papules, vesicles, blebs, or pustules, and notice if secondary lesions, as crusts, fissures, scales, or scars, are present. Then the color picture before us is carefully noted. Some of the papules are red, others violaceous, still others coppery-colored or dull-red. The shape of the individual lesion is recorded. Is it round, accuminate, flat, or angular? The size—is it pinhead, pea, bean, or coin in outline? Finally the arrangement of the lesions (discrete or grouped) and the general appearance of the skin, especially as regards moisture or dryness, are observed. After carefully noting the above the student is allowed to inquire as to subjective symptoms (burning and itching), and he is told to detect any constitutional state, using the thermometer and the stethoscope. A sample of the urine is obtained and a blood count may be necessary. Occasionally a biopsy is made or a culture for bacteriological study. It is only by this careful examination and observation that we are able in the majority of cases to make a correct diagnosis.

Having determined that the case before us is an eczema, our first duty is to properly cleanse the part and apply a suitable dressing. If our American working men and women afflicted could be financed over a period of weeks (as is the custom in some foreign countries) to give the parts involved rest and an opportunity to be properly protected, and also to give the physician in attendance a chance to correct errors in diet and hygiene—in other words, to school the patient in the right manner of living and try if possible to eliminate the factor which institutes the eczema, whether a toxin formed from within the organism or some external insult, or both —much good would result. It is surprising how few pharmaceutical preparations are required to effect a cure in the majority of cases. It is not so much what we use as the method of using a given preparation. Insist upon careful detail. In our cases we use Wilson ointment—ung. zinc oxide benzoinatis—with a vaselin instead of the lard basis. The parts are first washed with benzine and covered with the above ointment and a gauze bandage snugly applied. When the hands are involved and the patient cannot possibly leave his place of employment, we can frequently apply the dressing neatly under a light-weight cotton glove, and to the forearm the leg of a white stocking, until the acute symptoms have disappeared. The wearing of impervious material (rubber gloves) is not to be recommended. Daily changing of the dressing is important. Where there is a tendency to show chronicity we add silver nitrate to the Wilson ointment, q. s. to make a 2-per-cent preparation. Tar ointment—ung. resorcin comp., N. F.—is valuable in chronic eczema. A 2-per-cent salicylic zinc oxide paste (Lassar's) is useful in both subacute and chronic eczema. It is our duty to find out, if possible, whether a condition of anaphylaxis exists. Often some one article of food, as coffee, alcohol, pork or sugar, will cause a sensitization and render the skin susceptible.

Correcting errors in diet and keeping the bowels open will help us in overcoming this annoying disorder. When an intestinal antiseptic seems indicated a globule of castor oil and solol is excellent, or a pill of ichthyol coated with keratin is very satisfactory. We have found the normal tincture of echinacea useful in stubborn relapsing cases. As to the use of vaccines, we can say that often in the dry, scaly type of eczema improvement is seen after the injection weekly or biweekly of the staphylococcus suspensions. The combined albus, aureus, and citreus in doses of 50 to 250 million is used. This covers in a general way the treatment of eczema, and will be found practical and satisfactory in the large majority of cases.

SYPHILIS.

A great variety of lesions, from the primary or initial sore to the intermediate or so-called tubercular syphilides, and also the tertiary manifestations—the syphiloderma gummosum—are studied and treated. The chancre case is usually referred by the clinic clerk to the genito-urinary department. Occasionally an extra-genital lesion on the lip, chin, or finger is seen. The clinical varieties of the chancre are so numerous that we seldom depend upon the physical appearance to make a diagnosis. Of course the old text-book method of differential diagnosis—*i.e.*, incubation, numbers, edges, floor, and induration—we must still keep in mind, but we have in the microscopic examination of the secretion a far better and more certain means of telling what we have to deal with. The secondary stage is characterized by a series of constitutional symptoms, including the appearance of a generalized eruption. The purely macular erythematous type is frequently seen, more often maculopapular lesions, the pustular eruption seldom, while the tubercular and gummatous ulceration or tertiary manifestations of the disease are most often encountered. Our scheme for diagnosis as outlined above is again followed. The color of the early eruption is usually of a pinkish-red hue, and as they persist they take on more of a yellowish or brownish-red color. The Wassermann test is employed, both as a diagnostic test and as a therapeutic index in selected cases. Without this valuable aid we would often be sorely tried.

The differential diagnosis between psoriasis and papulosquamous lues is often difficult and the lesions present confusing. During the past few months several young women suffering from psoriasis showed lesions so closely resembling syphilis that clinically one would dispute the diagnosis of psoriasis. Here a serological test becomes absolutely necessary. In another instance a man showed on the back of his head a patch resembling lichen planus. The color of the lesion was violaceous; it was slightly elevated, and there was a fine but distinct scaling. The man denied syphilis. Examination of the penis showed a large cicatrix. We immediately began mixed treatment. At the present writing there is every indication of an early disappearance of a tubercular syphilide.

Treatment.—For monetary reasons we cannot give salvarsan to all our patients. In reference to this preparation, as a symptomatic remedy all doubt of its effectiveness has long since been dismissed. True, its curative properties are still in the balance, but few will deny its great value. Combined with mercury, given any way, a cure is almost certain.

IMPETIGO CONTAGIOSA.

Recently there has been a great increase in the number of cases of impetigo, amounting to nine per cent of the total number of cases seen. This is probably accounted for by the large number of wading pools recently built in the playgrounds by the Park Department. Here the children mingle in great numbers, and contagion is carried quite readily. The disease is generally recognized and easily curable in from one to three weeks. Ammoniated mercury, five to twenty grains to the ounce of cold cream, is all that is employed.

SCABIES.

This disease shows a remarkable constant quota of frequency. It is puzzling how a condition as common and distressing as scabies is so often overlooked and is diagnosed as neurotic eczema, pruritus, summer itch, etc. In making a diagnosis the distribution of the eruption is most important, especially in scabies. The hands between the fingers, the flexor surfaces of the wrists, around the nipples on the breasts of women, and on the foreskin of the penis in boys and men, are points of predilection. Here we find papules, vesicopapules, crusts, burrows, and scratch marks associated with intense itching. Often two or three members of the family are infected.

Treatment.—Wilkinson's ointment (ung. sulphuris comp., N. F.), a preparation containing sulphur, tar, and green soap, is commonly used with great benefit, but it is so dirty and often irritating that we now prefer the following combination:

Balsam Peru, 5.0;
Sulphur precip., 10.0;
Petrolata, 100.0.

One or the other of these remedies will accomplish the result in all cases.

RINGWORM.

For some reason few cases of ringworm present themselves for treatment. I am told by the school inspectors that large numbers of children, especially among the colored race, suffer from this highly contagious skin affection. The diagnosis is based upon the clinical appearance of the lesion and the microscopical picture.

Treatment.—We have very good success in the use of iodine in goose grease, ten-percent strength. In the eastern public schools oleate of copper is largely prescribed. The use of ointments to bring about a cure is time-consuming and laborious. The child will frequently lose the whole school term. The massive-dose (measured) *x*-ray therapy is by far the most rational treatment for this condition to-day. The subject is so important that it is worth while to devote some time to its adequate description. Epilation must be secured with a single dose of rays; the dose therefore must be sufficient, but not so heavy as to cause an inflammatory reaction of the scalp, for in such a case the hair will not grow again. The dose must therefore be measured by means of a Sabouraud pastille, which is placed at a distance from the source of the rays half as great as the distance of the scalp from the rays. Irradiation causes the pastille to darken in tint; when it reaches a standard tint, which is given in each case of pastilles sold, the area of the scalp which has been exposed will have received a pastille dose of *x*-rays. The match between the pastille and the standard tint must be made by daylight. This dose has been found by experiment to be adequate to produce epilation without causing permanent baldness. The hair begins to fall about three weeks after the dose has been given, and epilation is complete in about a month. The case is now free from infection and may go to school. The hair begins to grow again within two months.

PSORIASIS.

According to the records fewer cases of psoriasis have been seen than is the rule, and we can offer no explanation for the decrease. Difficulty arises at times in making a positive differentiation from some of the scaly syphilides. Often when the patient is not under active treatment the use of soap and water alone frequently alters the picture so much that mistakes are apt to occur.

Treatment.—Within the past few months a most careful and scientific study has been made by Schamberg of the protein metabolism of eight psoriasis patients, and he states that a low nitrogen diet has a most favorable influence upon psoriasis, thus confirming the observation of Buckley made some years ago, who said: "Excess of meat will often increase the eruption, and an absolute and perfect vegetarian diet will often be followed by absence of the eruption as long as it is persisted in." In the clinic as well as in private practice the combined use of baths, arsenic, and chrysarobin can still be depended upon to clear up this most annoying condition. A non-protein diet is also urged.

In addition to the foregoing patients there were interesting examples of the following diseases, of more or less frequent occurrence: Acne, urticaria, herpes simplex and zoster, seborrhea, and lupus erythematosus.

Of the uncommon diseases, blastomycoses, scleroderma, ulcera perforans of the foot, and pemphigus neonatorum were also observed.

LIVINGSTON BLDG.

INTERSTITIAL KERATITIS AND ITS TREATMENT.[1]

BY LEIGHTON F. APPLEMAN, M.D., PHILADELPHIA, PA.

Interstitial or parenchymatous keratitis, as the name indicates, is an inflammation which is characterized by an infiltration into the middle and deeper layers of the cornea, without a tendency to purulent disintegration or ulceration, and with an ultimate tendency to disappear, more or less completely, by resorption.

The disease occurs most frequently between the ages of five and 20 years; in the majority of instances a result of hereditary syphilis, according to some observers, in from 60 to 80 per cent of the cases. Acquired syphilis is considered the cause in from 2 to 10 per cent, and, next to syphilis, tuberculosis in about 10 per cent of the cases. Still others are ascribed to various diseases in which abnormal nutritional changes are manifestly predominant.

Leber believes it is associated or preceded by disease of the uveal tract in many instances; with this opinion Bruns is inclined to agree.

Females are more frequently affected than males.

The existence of hereditary syphilis may be indicated by a peculiar formation of the face and cranium, in which the upper jaws are flattened, the nasal bridge low and often sunken, the frontal eminence prominent, and scars are sometimes seen at the corners of the mouth. The teeth of the second dentition, particularly the upper incisors, show notched edges (the so-called Hutchinson teeth). The lymphatic glands of the neck may be enlarged, being hard and painless, with no tendency to break down, thereby differing from tuberculous enlargements, which are soft and tend to undergo caseation. Besides these, the presence of periosteal enlargements of the tibia, and deafness, emphasize the syphilitic source.

Interstitial keratitis may appear as a disciform opacity in the center of the cornea, or as an annular opacity near the limbus. In the first case, this area becomes cloudy, resembling a small macula, which spreads outward and involves the whole cornea more or less completely. The surface appears steamy or has a ground-glass appearance, due to roughening. After a time, newly-formed vessels are seen to be thrown out from the scleral vessels at the limbus, which advance toward the center and become so numerous as to make the cornea appear red over the affected area, or, if the cornea is very opaque, the vessels may appear salmon-colored.

If it starts near the limbus, as it sometimes does throughout the corneal circumference, it gradually advances toward the center.

In most cases the sight is so seriously impaired that the patient can barely count fingers, or, in others, see the movements of the hand before the eye. As a rule both eyes are not affected at the same time, although the second eye is ultimately involved —it may be after an interval of several weeks, months, or years. Of this the patient should be warned.

At the same time that these changes are taking place in the cornea, the patient shows marked irritative symptoms consisting of photophobia, pain, and lacrimation. Iritis or cyclitis, or other inflammations of the uveal tract, often accompany the condition. As a result of iritis, posterior synechia, seclusion or occlusion of the pupil may follow if proper treatment is not instituted early.

The disease is essentially chronic in nature and may persist for months before it finally begins to clear up. Of this the patient should be told, as naturally he later becomes impatient under treatment which seems to result in so little immediate improvement. So, too, the impairment of sight becomes such as to greatly discourage the patient of ever being able to see. However, the prognosis which may be extended to the patient is, in the main, favorable as to the restoration of reasonably fair vision,

[1]Read before the Polyclinic Ophthalmic Society, Jan. 8, 1914.

although the cornea rarely, if ever, becomes perfectly transparent. Recovery begins by a gradual clearing of the peripheral portions of the cornea, the center being the last to clear up. In giving a prognosis, however, the possibility of impairment of vision through inflammatory changes in the deeper structures should be thought of, namely, choroiditis, optic neuritis, and hemorrhages.

The treatment of this condition is, first, local, which consists in the use of atropine to maintain mydriasis, thereby preventing posterior synechia should iritis be present, and to put the ciliary muscle at rest.

Dionin, in 2-per-cent or 5-per-cent solution, tends to aid in the absorption of inflammatory exudates through its lymphagogue action, and diminishes pain. This may be used early and, I think, tends to materially shorten the duration of the disease. Hot compresses are also efficient in diminishing pain. Local depletion may be practiced by leeches applied to the temples. Dark-colored glasses should be worn to protect the eye from glare.

General treatment is directed toward the underlying cause. In the majority of cases benefit is to be derived from the administration of mercury to the point of tolerance, to be followed by iodides. Probably the most efficacious mode of administration is by inunction of one drachm of mercurial or blue ointment daily, preceded by sweating through the use of the hot pack. This thoroughly stimulates nutritional changes, aiding in the elimination of toxic or effete materials from the body, and, aside from those cases which show a definite syphilitic taint, aids in the absorption of inflammatory products at the inflammatory focus.

Mercury has also been used by various observers in other forms: Gray powder and the iodides by the mouth; bichloride by hypodermic and by subconjunctival injection being recommended by some.

Salvarsan is now used by some with gratifying results in many cases of interstitial keratitis of syphilitic origin, injections of from 3 to 6 grains being given at intervals of three or four weeks until from four to six have been given, at the same time employing the usual mercurial medication during the intervals.

Vandegrift (*Medical Record,* Oct. 26, 1912) reports three pronounced cases treated by intramuscular oily injections of salvarsan in which the drug worked so quickly that little connective tissue formed. In each case the corneal infiltrate was absorbed more quickly than with mercury. He recommends that it be employed early in the attack to produce these good results, as old scars show little change.

According to some other observers, salvarsan has little influence in this disease, much less than upon syphilitic manifestations in other parts of the body.

In those cases in which tuberculosis is the causative agent, curative doses of tuberculin have given good results.

It is to be emphasized that in all these cases treatment should be roborant in character, using all means in our power to increase general nutritive changes. For this purpose, arsenic, iron, and cod-liver oil are used to improve the condition of the blood; constipation and imperfect assimilation should be corrected; and the patient should have plenty of good food, outdoor exercise, and healthful surroundings to still further improve his condition.

After the local irritation has subsided, and when absorption is going on, the process may be hastened by one of the following means: First, by the use of dionin in 5- or 10-per-cent solution, instilled two or three times a day, which acts by increasing the lymphatic activity; secondly, by the use of subconjunctival injections of from 5 to 15 minims of normal salt solution, repeating them after the resulting irritation has disappeared; or, thirdly, by the use of mercuric oxide ointment, applied or introduced into the cul-de-sac and followed by massage of the cornea through the closed lids.

Iridectomy may be necessary if a dense central opacity remains, or if the intraocular tension increases and glaucoma threatens during the course of the disease.

CEREBROSPINAL SYPHILIS, WITH ESPECIAL REFERENCE TO TREATMENT.[1]

BY CHARLES W. JEFFERSON, M.D., LOUISVILLE, KENTUCKY.

It cannot be stated with any degree of certainty when the first case of cerebrospinal syphilis was encountered and the symptomatology thereof accurately described, nor has there yet been advanced a perfectly tenable and understandable hypothesis to explain why the terminal toxic influence of the spirochæta pallida should in one instance be concentrated upon the internal viscera, in another upon the vascular, cerebral or nervous mechanism of the economy, while in others no demonstrable terminal phenomena occur. Moreover, excepting recently acquired knowledge as to the etiology, little is now definitely understood concerning the natural history and symptomatology of the disorder which was not equally well known years ago; even the name "syphilis" is of obscure and uncertain origin, having been first utilized for a non-medical purpose by Fracastorio about the year 1500. With respect to the treatment of the disease, however, advancing strides have been made toward the acme of perfection during the last few years.

Syphilis has gradually extended until its insidious manifestations have practically penetrated the furthermost ramifications of human habitation. Only those interested in this branch of medical research realize the extent to which the disorder has been disseminated, affecting alike the rich and the poor, the educated and the ignorant, in both urban and suburban communities. While not many years ago the disease was practically unknown in certain suburban districts, the multiplicity of railway and trolley-line facilities has brought suburban life into more intimate relationship with urban life, so that in regions hitherto considered geographically remote, and "where the inhabitants were unacquainted with sinful city ways," syphilis and sexual diseases are now frequently observed.

Unfortunately the suburbanite becomes the host of the spirochæta pallida or the equally ubiquitous organism of Neisser, and more often than otherwise remains untreated and a constant disseminator of infection until the supervention of life-endangering complications or sequelæ arises. Therefore it may be readily understood why once introduced into a certain community syphilis and specific (Neisserian) urethrorrhea are almost indefinitely perpetuated. These facts also suggest a plausible theory to explain the greater preponderance of cerebrospinal syphilis in suburban than in urban communities.

Contrary to the generally accepted opinion, cerebral or cerebrospinal syphilis oftentimes supervenes within two or three years from the date of the original infection, although in the majority of instances the brain and meninges do not become involved until much later in the history of the disorder. It seems certain, based upon the researches of modern clinicians, that the spirochæta pallida practically always invaded the central nervous system in acquired syphilis, and why cerebral or cerebrospinal involvement is not the rule rather than the exception has never been satisfactorily elucidated. The statement appears amply warranted, however, that syphilitic implication of the brain and meninges constitutes a more prolific cause of mental disease than has been hitherto believed.

As the scope and intent of this dissertation preclude specific consideration of the progressive manifestations incident to luetic infection, the symptomatology of the later stages may as well be also omitted. However, the writer desires to correct one erroneous prevailing impression, viz., that the progressive so-called "lightning pains" can be no longer regarded as pathognomonic of beginning locomotor ataxia, since the phenomenon may not be present at any stage of the disorder.

The prognosis in late cerebrospinal

[1]The case herein reported and portions of this paper were presented before a meeting of the Jefferson County Medical Association, Louisville, Kentucky, February, 1914.

syphilis has heretofore been considered almost universally unfavorable, even symptomatic improvement being seldom noted from vigorous exhibition of approved therapeutic measures. Especially is this true of locomotor ataxia, which in ninety per cent of instances owes its origin to luetic infection, as the numerous individuals laboriously perambulating by the aid of crutches, canes, etc., can amply testify. It was hoped salvarsan might prove an efficient and satisfactory remedy for the cure of luetic infection regardless of the time when the patient might be observed—*i.e.*, that the remote effects or sequelæ would yield to its magic influence; but the beneficial results accruing therefrom when administered in the early stages have signally failed of realization when applied to the later manifestations. In only an exceedingly limited number of instances has benefit followed the employment of salvarsan according to the methods hitherto in vogue in any of the sequelæ of syphilis, or the so-called "parasyphilitic" disorders.[1] In the more acute types of cerebral or cerebrospinal syphilis, however, improvement has sometimes accrued from administration of salvarsan in conjunction with other remedies. An illustrative example of this character has recently been recorded by Eddy, the patient being a male of thirty-four who contracted syphilis in 1903, implication of the brain occurring in December, 1912. Under the administration of salvarsan intravenously, with neosalvarsan and salicylate of mercury intramuscularly, the patient was discharged apparently cured within two months.

As already intimated, in the majority of instances of late cerebrospinal syphilis all the older methods of treatment having proven absolutely unavailing, other means have been diligently sought by the intelligent utilization of which at least improvement in the clinical symptoms might be secured. Thus Swift and Ellis, after considerable experimentation, devised a plan by which the spirochæta pallida might be attacked in its principal stronghold hitherto though impregnable, viz., the subarachnoid space, by the intraspinous injection of salvarsanized blood serum, the details of which and the technique of its administration will be later more fully described.

It has heretofore been the almost invariable custom, when implication of the central nervous system occurred during the course of luetic infection, for the medical attendant to refer the unfortunate patient to a specialist in nervous diseases, all the known methods of drug treatment having previously been exhausted. Especially has this been true after the supervention of locomotor ataxia, and realizing that no benefit could be expected to accrue from the further exhibition of drugs, the specialist usually prescribes systematic exercises and resorts to the application of electricity in the vain hope of at least partially restoring the impaired nervous and mental equilibrium. Meanwhile, although the patient may exhibit temporary amelioration of symptoms, the spirochæta pallida securely intrenched within the central nervous system continues to proliferate, and there is gradual extension of the disease in intensity of all the clinical symptoms.

That active syphilis still exists after the supervention of locomotor ataxia and other so-called "parasyphilitic" nervous affections is demonstrable (*a*) by the presence of spirochætæ pallidæ in the cerebrospinal fluid, (*b*) a persistent pleocytosis, (*c*) an increase in the globulin content, and (*d*) a positive reaction to the Wassermann test. Even after the blood of the patient has been rendered negative to the Wassermann test by persistent treatment according to the methods at present in vogue, the abnormalities of the cerebrospinal fluid remain unchanged, thus emphasizing the suggestion already made that the spirochæta pallida intrenched within the sub-

[1]The term "parasyphilitic" is utilized herein merely to conform to the manner of expression of other observers, not because the writer for a moment admits its correctness. Certainly the statement requires no emphasis that "near-syphilis" or "against-syphilis" can be regarded as neither expressive nor correct when referring to remote or obscure lesions the result of luetic infection.

arachnoid space cannot be reached and eliminated by the administration of drugs.

A brief anatomical survey of the meningeal membranes and spaces appears important in this connection, especially in relation to the method of treatment to be later described. First, the dura mater is ordinarily found partially adherent to the overlying cranial structure; secondly, the arachnoid membrane which occupies the space between the dura and the pia mater becomes affected; thirdly, the pia mater covering the surface of the brain and spinal cord succumbs. Between the arachnoid membrane and the pia mater is the subarachnoid space which freely communicates with the brain and spinal cord; this space contains cerebrospinal fluid (enclosing the brain and cord on all sides) which freely communicates with the brain, and through the foramen of Magendie and Luschka the fluid is in communication with the ventricles of the brain. In the subarachnoid space are also the Pacchionian bodies situated chiefly along the sinuses, being in fact protrusions of the arachnoid membrane into the interior of the sinuses. The cerebrospinal fluid is brought into close contact with the venous circulation through these bodies, there being only a thin layer of dura and arachnoid intervening. The secretion of cerebrospinal fluid by the chorioid fringes is estimated at about 160 Cc. per day; it is a thin, colorless liquid with a specific gravity of 1.007 to 1.008, and contains no cellular elements excepting a few large endothelial cells and an occasional lymphocyte. It becomes slightly cloudy when heated, due to the presence of a protein substance which is known as globulin.

The cerebrospinal fluid of an individual the subject of syphilis of the central nervous system shows characteristic departures from the normal which may be regarded as almost pathognomonic. As already suggested, reaction to the Wassermann test is plus in the vast majority of instances. It need not be plus, however, since a negative Wassermann reaction does not necessarily mean the non-existence of syphilis, especially if the cell-content and the protein be in excess. In cerebrospinal syphilis the lymphocytes are increased, the mononuclear elements predominating, and the globulin is also increased.

It has been repeatedly demonstrated by experimentation that the cerebrospinal fluid is quickly renewed after withdrawal, that normal saline solution injected without removal of any of the fluid is eliminated with great rapidity, and likewise that any drug which may reach and combine therewith is promptly excreted. This probably explains in large measure the failure of seemingly appropriate drugs administered internally or through the blood stream to reach and destroy infectious and toxic material known to be present within the spinal cord. The cerebrospinal fluid does not readily take up drugs even when administered through the blood stream, and that it rapidly eliminates whatever may be introduced or absorbed is an observed fact which cannot be elucidated upon any hypothesis thus far suggested. It has been claimed by recent authors that the blood supply to the spinal cord is exceedingly limited, but this is certainly an erroneous idea. When it is remembered that the blood normally contains serum albumin, sugar, urea, etc., whereas these substances are rarely found present in the cerebrospinal fluid, that salvarsan and other drugs fail of absorption when administered through the blood stream should not be difficult of understanding. Flexner recognized this fact several years ago, and introduced the method of direct injection of serum into the subarachnoid space in the treatment of meningitis.

The familiar observation may bear repetition that the normal intracranial pressure is between 50 and 60 mm. (mercury), that this has been determined by opening the skull and after dividing the dura connecting the underlying space with a manometer. The pressure always equals that within the venous sinuses, and as the large veins are surrounded by cerebrospinal fluid

an equilibrium of pressure is necessitated. It may be readily understood, therefore, that the intraspinous injection of any substance, provided none of the cerebrospinal fluid be previously withdrawn, would of itself assist in the rapid elimination of the injected fluid. To illustrate the safety of withdrawing a considerable quantity of the cerebrospinal fluid, it is only necessary to recall the fact that in extensive fracture of the skull a large amount of the fluid may escape, even as much as 200 Cc., within twenty-four hours, without deleterious effect upon the individual. The fact that it is rapidly reformed or renewed should dissipate the fear of removing too much of the fluid (within certain limits) before practicing intraspinal injection.

In an endeavor to perfect a suitable method of treatment of syphilis of the central nervous system, Swift and Ellis undertook a series of experiments upon syphilized monkeys, first injecting small quantities of salvarsan and neosalvarsan directly into the cerebrospinal canal. However, as these injections proved entirely too irritating, dilutions of salvarsanized blood serum with normal saline solution were then utilized, the irritating effect being noted by using as an indicator the cell-count of the cerebrospinal fluid. It was demonstrated by these experiments that salvarsanized blood serum had a decided spirochæticidal action. The details of their method of preparing and administering salvarsanized blood serum in the genus homo is briefly as follows: One hour after intravenous administration of salvarsan 40 Cc. of blood is withdrawn and placed upon ice for twenty-four hours, thus permitting the serum to separate. The serum is then centrifugalized and 12 Cc. thereof mixed with 18 Cc. normal saline solution, thus making a 40-per-cent salvarsanized blood serum. This is heated to 56° C. (132.8° F.) for thirty minutes, "which activates the salvarsan." About 25 to 30 Cc. cerebrospinal fluid is slowly withdrawn by lumbar puncture, the 30 Cc. serum being then slowly injected by gravity.

As evidence of the efficiency of intraspinous injections of salvarsanized blood serum in the treatment of cerebrospinal syphilis, the following preliminary report is offered:

The patient, a male aged thirty-seven, came under observation several months ago. He had suffered the usual diseases of childhood, and gave a history of specific urethrorrhea ten years previously. Seven years ago he contracted syphilis, for which he was under the treatment of another physician for four years, the disease evidently being of severe type.

During January, 1913, he first noticed that he was getting extremely nervous, and there was a strange sensation of numbness about the soles of his feet and also the ends of his fingers. Shortly afterward stiffness of his legs and thighs developed. In March, 1913, marked unsteadiness in gait was noted, and he was unable to walk in the dark without falling. He then consulted his family physician, who made the diagnosis of locomotor ataxia. Mercurial treatment (chiefly by inunction) was instituted, and was continued until the patient came under the observation of the writer. In the meantime there had been a rapid increase in all the clinical manifestations.

Date of first observation, October 10, 1913: On examination the following symptoms were noted: Complete abolition of knee and ankle tendon reflexes; patient complained of entire loss of sexual power; inability to walk without the aid of a cane; great difficulty experienced in arising from sitting posture; numbness of hands and feet; at times profound weariness; slight hypotonia; inability to touch nose with finger, and gait tottering with eyes closed; girdle symptom marked. Diagnosis, tabes dorsalis. A rather peculiar feature was that the patient had at no time complained of lightning pains.

Vision: R. E. 20/20 minus; L. E. 20/20 plus. Pupils: R. E. slightly larger than normal; L. E. about normal; both reacted slightly to light; sluggish for distance. Disc: whitened more in right eye than left.

Treatment: October 16, 1913, 0.6 gramme salvarsan intravenously. October 24, ½ grain salicylate of mercury intramuscularly. October 31, ¾ grain salicylate of mercury intramuscularly. November 7, 1 grain salicylate of mercury intramuscularly. November 14, 1 grain salicylate of mercury intramuscularly. November 21, 1¼ grains salicylate of mercury intramuscularly. November 28, 1½ grains salicylate of mercury intramuscularly. December 3, 1½ grains salicylate of mercury intramuscularly. December 6, 0.6 gramme salvarsan intravenously. December 12, ½ grain salicylate of mercury intramuscularly. December 19, ¾ grain salicylate of mercury intramuscularly. December 24, 1 grain salicylate of mercury intramuscularly. December 30, 1¼ grains salicylate of mercury intramuscularly. Potassium iodide administered in small doses at intervals. Blood of patient negative to Wassermann test.

January 10, 1914, 0.3 gramme salvarsan intravenously. January 11, intraspinous injection of 30 Cc. salvarsanized blood serum. January 30, 0.5 gramme salvarsan intravenously. January 31, intraspinous injection of 30 Cc. salvarsanized blood serum. Between 25 and 30 Cc. cerebrospinal fluid withdrawn by lumbar puncture before each intraspinous injection.

Marked evidences of reaction occurred five hours after the first intraspinous injection, there being pain in the head, legs, and thighs; some twitching of the limbs; patient complained of vertigo. These phenomena were satisfactorily controlled by the administration of codeine. The temperature ranged from 96° to 100° F., reaching the highest point on the following day; pulse and respiration were practically normal. The patient was extremely drowsy for several days, and complained of "singing in his ears." All unpleasant manifestations gradually subsided.

Examination of the cerebrospinal fluid before first intraspinous injection: Wassermann-Noguchi ++; globulins ++; pleocytosis 72 cells. At time of second intraspinous injection: Wassermann-Noguchi +; globulins ++; pleocytosis 60 cells.

Following the second intraspinous injection the reaction was more severe, morphine hypodermically being required to control pain in head and legs. Temperature ranged from 97° to 101° F., pain beginning within two hours after the injection. Nothing unusual noted about pulse and respiration. Gradual subsidence of the phenomena occurred.

Within a week after the first intraspinous injection the symptoms of locomotor ataxia began to improve, and at the end of the second week the patient was able to walk without the aid of a cane. He has gained considerably in weight, and the nervous symptoms are much improved.

Intraspinous injections should be administered every two weeks until the cerebrospinal fluid is negative to the Wassermann test, until the globulins are normal, and until the cell-count is not over five. While it cannot be reasonably expected that this method of treatment will effectively repair damage which has already occurred in the central nervous system, it is quite probable that the progress of the disease can be arrested and further damage prevented. This has at least appeared to be true in all cases in which the treatment has been intelligently applied.

Quite recently Boggs and Snowden have reported several cases of cerebrospinal syphilis treated by intraspinous injections of salvarsanized blood serum, according to the method outlined in the foregoing, excepting that the undiluted serum was employed and larger quantities were injected. Treatment was repeated every ten to twenty days until the cerebrospinal fluid became normal in the cell-count and negative to the Wassermann test. The authors claim marked improvement occurred in every instance, the cell-count becoming normal and the Wassermann negative in most cases; that the most constant result was disappearance of lightning pains and other sensory disturbances, thus inducing a more cheerful mental attitude with cor-

responding improvement in the appetite and nutrition. The beneficial effect upon locomotion was slower in development, but apparently more pronounced improvement was achieved than in patients treated by smaller doses of the diluted serum.

In conclusion, it is believed that the intraspinous injection of salvarsanized blood serum, according to the plan outlined in the foregoing text, represents a distinct advance in the therapeutics of cerebrospinal syphilis, and the results thus far obtained appear to offer reasonable promise of greater benefit to these unfortunate patients than has accrued from older methods of treatment.

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THE MEDICAL MANAGEMENT OF EXOPHTHALMIC GOITRE.

The surgeons are, some of them, so convinced that the only treatment of this state is surgical that it is refreshing to hear the view expressed that medical treatment is useful. ABRAHAMS, in the *Medical Record* of June 20, 1914, thinks the most distressing sign of the disease is the rapidity of the heart action. He finds, in his experience, that the tincture of strophanthus given in 5- or 10-minim doses, three times a day, is most useful to steady the heart. This drug has been his standby in a practice covering a period of twenty-three years. For a long time strophanthus was discredited in Graves's disease for the reason that it produced diarrhea. At present the tincture of strophanthus is free from that drawback, and can therefore be given with the same safety, security, and confidence as any other tincture without running the risk of undesirable side-effects. If, however, strophanthus fails, the tincture of belladonna, in the same dose, is a good second best. Strange to observe, digitalis, the sheet-anchor in many a form of cardiac disease, acts badly on the heart in Basedow's disease, although there is noted a strong functional similarity between the heart in Basedow's disease and some types of rheumatic cardiac lesions.

The other distressing conditions in exophthalmic goitre are tremor and nervousness. These are very well controlled by ammonium bromide in doses of twenty grains three times a day; this need be given for a short time only, because when the strophanthus begins to act the nervousness subsides, as a good share of it results from the consciousness of a rapid and pounding heart.

The lukewarm shower-bath is another means to allay tremor and nervousness. The bath also works well as a hypnotic. Iron is rarely indicated, an opiate never. Once in a great while, when the patient is much disturbed at night with frequent urination, one-quarter grain of codeine taken at bedtime will mitigate that evil.

There is no direct means of reducing the size of the thyroid except by the method of treatment thus far and further indicated. Yet plaster of any kind, belladonna, zinc, or adhesive, seems to reduce the size of the gland; the reduction is apparently affected by pressure of the plaster. Abrahams has seen a fair degree of diminution of the thyroid body obtained by repeated application of flexible collodion. The patients instinctively know the value of external pressure as they learn to put ribbons tightly around their necks, although in the beginning the ribbons are employed to hide the deformity.

The eyes rarely need attention, although in one case the eyelids were partially sewed up to keep the eyeballs covered. That was the severest case, Abrahams asserts, he ever saw.

The diet should be of the simplest kind. Some of these afflicted individuals have ravenous appetites for a time. Abrahams indulges them until they are satisfied; after they are surfeited they become docile and are willing to take advice. Tea and coffee are the bane of exophthalmic goitre. These beverages should be forbidden.

EDITORIAL.

THE UNTOWARD EFFECTS OF SALVARSAN AND THEIR TREATMENT.

Notwithstanding the facts that its best friends have long recognized that salvarsan is a complex substance possessed of very great potentialities, and, on the other hand, that it has been given in thousands of cases by persons who have had no opportunity to become skilful in its administration, the number of instances in which serious after-effects have developed have been surprisingly small.

From the very first it was recognized that degenerative changes in the cardio-vascular system and in the kidneys greatly predispose the patient to evil effects from this substance, to such an extent, indeed, that their existence may be considered as a positive contraindication to its employment.

It has also been noted that in many cases of cerebral syphilis the administration of salvarsan has been followed by the development of stupor, coma, and death, and no less a person than Ehrlich himself has pointed out that the administration of a second dose of salvarsan, to a patient who has had mild symptoms of this character after the first dose, is like pouring oil on a fire if the two doses are given close together.

There are a number of points in connection with the effects of salvarsan which still require careful study. One of these points can be eliminated only with the passing of years, namely, as to the permanency of the cure which is induced by the drug. Another point is the development of the cerebral symptoms to which we have referred. It seems to be a commonly accepted theory at the present time that these symptoms partake of the nature of a Herxheimer reaction and are due to the setting free of endotoxins by reason of the destruction of spirochætæ under the influence of salvarsan.

Ehrlich, in a most interesting communication to the *British Medical Journal* of May 9, 1914, also expresses the belief that in those patients in whom evil symptoms develop some time after a dose of salvarsan is given, these symptoms are probably dependent upon the production in the body of an oxidation product—paraminophenyl-arsenoxide. This product seems to develop in the body in those persons to whom an overdose is given or in whom kidney disease exists, whereby elimination is delayed.

Perhaps the most important part of Ehrlich's letter to which we have referred deals with the free use of adrenalin for the purpose of combating the symptoms which arise in the course of salvarsan accidents. In those cases in which, immediately after the use of the drug, the face becomes cyanotic and dyspnea is present, prompt relief seems to follow the hypodermic injection of this internal secretion. So, too, he quotes Milian, of Paris, as having found such a use of adrenalin valuable for the purpose of overcoming the diarrhea and suppression of urine which are sometimes met with. Furthermore, Milian has reported a case of encephalitis hemorrhagica induced by salvarsan, and which was apparently hopeless, because of the deep coma which was present, which was saved by this treatment. Other clinicians have used adrenalin in this manner with excellent results, and these facts lead Ehrlich to believe that by a vigorous treatment this scourge of salvarsan therapy may be put aside in a very large percentage of cases. This novel use of adrenalin is of great importance to remember and of extraordinary interest.

In cases of cerebral syphilis Ehrlich points out that we must not attack the disease with a bludgeon—that is, by giving the drug in large doses—but must gradually steal in and get rid of the parasites in this manner.

Our readers will remember that we have recently called the attention in our review

columns to Wechselbaum's book upon Salvarsan Accidents, in which Wechselbaum takes the ground that it is dangerous to use salvarsan after freely employing mercury. Wechselbaum's experience is so enormous that any statement by him should be accepted as of great importance, but it is interesting to note that in cases of cerebral syphilis Ehrlich believes that a thorough course of mercury should precede the salvarsan treatment, Ehrlich thereby taking a point of view apparently opposed to that of Wechselbaum.

Fuller details in regard to these important points will be found in the Progress columns of this issue of the GAZETTE.

ETHER-OIL RECTAL ANESTHESIA.

On a previous occasion we have called attention to the fact that surgical anesthesia, induced by the injection of ether into the rectum, had once more been brought forward for practical consideration. In this particular instance the irritating effect upon the rectal mucous membrane is in part put aside by the administration of olive oil with the ether. The advantages are, of course, in those cases in which an operation is to be performed upon the respiratory passages, or in the mouth or on the jaws. It would seem, however, that the successful production of anesthesia by such means is more interesting as proving that it can be done than because it possesses any considerable therapeutic value.

In the *Medical Record* of May 9, 1914, Luke, who is the anesthetist to St. Luke's Hospital, New York, has certain criticisms to offer concerning this plan which we think are wise. He does not go so far as to condemn the procedure for every case, but believes that it should be regarded with much conservatism and used, if at all, in a very limited class of cases. The objections to this method are that it is difficult to regulate the dose with the accuracy with which it can be governed when ether is given by inhalation. An additional disadvantage is that during the induction of anesthesia the patient may suffer from intestinal cramp, with distressing symptoms of fulness and pressure in the lower bowel, and there may also be different degrees of anal irritation at this time or after the operation. So, too, the stage of induction may be so prolonged as to necessitate the additional use of ether by the lungs. Respiratory depression may become marked, the muscles may become unduly relaxed and the pupils dilated. Equally serious, if not more serious, objections are the occurrence of mild or severe grades of proctitis and colitis in patients who, prior to the use of the anesthetic by the rectum. had no intestinal disorder whatever.

Finally, Luke believes that recovery from the anesthesia may be prolonged for many hours, and that there is a greater possibility of postanesthetic toxemia in such cases than in those who receive the drug by the lung. For these reasons Luke states that the advantages of the ether-oil method are more apparent than real, and this is the more true because in operations about the face and mouth intratracheal anesthesia can be readily carried out. He cites one instance in which a man of fifty years following the ether-oil rectal method remained in the most profound state of narcosis for nearly six hours, and this notwithstanding the fact that both before and after the operation the colon was repeatedly irrigated.

Even those who are most in favor of the ether-oil rectal proposition recognize that it is not to be employed in the presence of irritation, inflammation, or disease of the lower end of the alimentary canal.

THE TOXICITY OF VERONAL.

The fact that veronal is largely prescribed by physicians, and also largely used by patients without a physician's order, and that untoward effects following its administration are rarely reported, serves to indicate that it is not a markedly toxic substance and also attaches peculiar in-

terest to reports dealing with patients who have suffered from veronal poisoning. Not long since we printed in these columns a summarization of the symptoms induced by an overdose of veronal, and showed how innocuous a hypnotic it was in the majority of persons.

In the *British Medical Journal* of April 18, 1914, Russell and Parker report a fatal case of veronal poisoning. A man of fifty, who suffered from mental depression and insomnia, had been advised by his physician not to continue the use of veronal, but he nevertheless took it. Although the exact dose that was swallowed is not known, it is believed by the reporters that it ranged somewhere between 15 and 50 grains, which is so wide a range that their belief possesses little importance. During the night he was heard to snore loudly, and next morning was found deeply comatose and breathing heavily; the pupils were small, but reacted to light, and later on were moderately dilated. There was no evidence of paralysis, but the limbs were flaccid and no reflexes could be obtained. The color was natural, the skin moist, the temperature about a degree above normal, the pulse quickened, and the blood-pressure within normal range. The lungs were clear, but there was some tracheal rattling. The patient was treated by having his stomach washed with a stomach-tube, and on catheterization it was found that his urine contained neither albumin nor sugar. He also received nutrient enemata which contained coffee and strychnine. About seventy-two hours after the poison had been swallowed the temperature rose to 107.2°, but was reduced to 104.5° by cold bathing. The heart acted fairly well, but one lung became filled with moist râles, and death took place within a few hours. The autopsy revealed nothing which could be considered characteristic of veronal poisoning. The kidneys were normal, but the heart muscle showed some degenerative changes. Its cavities contained liquid blood and post-mortem clots. A careful chemical analysis was made of the tissues and of the urine, and on the basis of the results obtained by this analysis the authors reached their conclusion as to the probable amount of veronal which the patient ingested.

It is interesting to note in this connection that in the same issue of the *British Medical Journal* Munro reports the case of a young woman of twenty who recovered after ingesting 125 grains of veronal, or about three times the amount which is supposed to have caused death in the case recorded by Russell and Parker. During the night she was found unconscious and could not be aroused by any means. The eyes were open, the eyeballs fixed, pupils semidilated, and light and corneal reflexes abolished. The cheeks had a natural flush, the breathing was perfectly quiet and natural, the pulse full and at the rate of 72 a minute. There was no urinary or fecal incontinence. On washing out the stomach with the stomach-tube only a little colorless fluid and mucus was withdrawn. Strong black coffee was given by the tube and 1/40 grain of strychnine given hypodermically. In a short time more coffee was administered by the tube. Periodical rectal irrigations of saline were resorted to and catheterization kept the bladder empty. Strychnine was given hypodermically when the pulse weakened and oxygen inhalations when cyanosis became marked. The period of total or partial unconsciousness lasted three and a half days, but the corneal reflex returned in about forty hours. Complete recovery ultimately occurred. Munro states that Hove's case died thirty-two hours after ingesting 150 grains, and Hald has recorded a case which recovered after taking 135 grains. Alexander and Chitty have also recorded surviving cases in which the amount taken was 125 grains, but in Alexander's case the stomach was washed out within five hours after the poison was taken. Nevertheless the unconsciousness lasted for four days. Ehrlich has reported the case of a lunatic who swallowed 132 grains and died in twenty hours, the symp-

toms consisting of respiratory paralysis and cyanosis. A case of subacute poisoning is also reported by Fraser, in which instance a woman died eighty-six hours after having taken 120 grains in ten days. Munro also quotes Grober as believing that veronal is two to four times as toxic as has been commonly supposed, whatever this may mean.

It would appear that the most essential thing in treating these cases is to wash out the stomach promptly and to rely upon respiratory stimulants and external heat.

The exact fatal dose of veronal, like the exact fatal dose of all other drugs, is impossible to determine, since much depends upon the individual's susceptibility and much also depends upon the presence of healthy organs. Patients suffering from Bright's disease, with impaired powers of elimination, would naturally be unable to survive doses which a person with healthy kidneys could tolerate. So, too, cardiac and pulmonary lesions might be factors in aiding the production of the natural result. Taking all the facts which we have at hand concerning this drug it must be admitted, as we said in our last leading article dealing with this subject, that considering the therapeutic power of veronal it is a remarkably safe agent, unless greatly abused.

EMBOLISM AND THROMBOSIS OF THE MESENTERIC VESSELS.

This apparently rare condition, recognized as a rule only on operation or still more commonly after death, is characterized by so few published reports that Trotter's study of 360 cases (*Bristol Medico-Chirurgical Journal,* March, 1914) is a tribute to his powers of scholarly research. The first case of this kind recorded, on the authority of Trotter, was by Tiedman in 1843.

The majority of emboli and thrombi were arterial, but by no means a large majority. In a small number of cases both the vein and the artery were involved.

As to vein occlusion, involvement of the inferior mesenteric vessels is of minor import clinically. Even though the superior vein be blocked, intestinal infarction is not likely to result unless there be wide extension of the clot reaching close to the intestine. The usual course of thrombosis is extension from the portal vein incident to one of the varying causes of pressure such as cirrhosis or malignant growth and exceptionally gall-stones. Given obstruction plus stasis in the portal circulation a wide-spread thrombosis is always possible. The appendix and the genitalia of the female are the common foci of infection. Trotter observes that of 137 cases of venous thrombosis the intestine showed infarction in 91; whilst there were 106 cases of infarction of the intestine in 197 cases of thrombosis and embolism, with hemorrhage or great engorgement in 36 of these, and ulceration of the mucosa in 10. Though the superior mesenteric is functionally an end artery, there are 10 cases recorded in literature in which collateral circulation was established, proving inadequate in six.

The arterial obstruction may be embolic or thrombotic. Arterial sclerosis may be regarded as a strong predisposing factor. This sclerosis gives rise to the clinical symptom of "intermittent mesenteric claudication," characterized by spasmodic attacks of bowel pain. The embolic occlusion is commoner than thrombotic, the embolus arising from the pulmonary vessels. Two clear cases of embolus involving the inferior mesenteric artery are reported. The view is advanced that the intestinal lesions found in Henoch's purpura are of embolic origin, the emboli coming from the heart.

When the vessels are occluded there results hemorrhagic infarct and less severe hemorrhagic changes, and anemic gangrene or ischemia of the intestine. Anemic gangrene was noted in nine cases. In the latter case the obstruction must necessarily be near the intestinal wall. Trotter divides the cases into acute and subacute, the acute

cases terminating in the course of a week or under, and chronic cases lasting eight days or more. A greater proportion of arterial than venous cases are acute, giving a previous history of valvular heart disease, cirrhosis, or chronic Bright's disease.

When the affection is secondary to sepsis, as in appendicitis, there is usually an interval before the development of symptoms, sometimes lasting many weeks. Typical attacks are characterized by sudden prostrating abdominal pain, vomiting of blood-stained material, bloody diarrhea, and a profound effect upon the circulation. The belly is tender and obstruction develops, with tympany and thoracic respirations. It is obvious that these symptoms are not sufficiently definite for the formulation of a clear diagnosis. As a matter of fact Trotter notes that diagnoses were made in but 13 of the 360 cases. Perhaps the suggestive features would be a history of endocarditis, abdominal sepsis, or cirrhosis, and the absence of those clear-cut clinical features which characterize, for instance, intussusception, volvulus, or other common causes of disease. Bloody stools and bloody vomit are as characteristic as any single symptom.

Prompt operation and resection of infarcted portions of the bowel is the ideal treatment. Occasionally the operation shows a bowel still with sufficient circulation to recover, and intervention beyond mere exploration is not needful. Trotter gives as the result of operation, exclusive of cases in which nothing was attempted, some 36.2 per cent of recoveries. Not more than one-third of the total length of the small gut should be removed. Of Flint's fifty-nine cases in which, with one exception, resections of two meters and over were made, fifty recovered.

Though this interesting study throws no new light on the subject, it will serve its end by calling attention to the fact that the condition should always be considered in formulating a diagnosis of any acute abdominal crisis.

TYPHOID SPINE.

An osteoperiostitis involving chiefly the ribs and tibia and coming on during convalescence or many months after, characterized usually by moderate pain and by a slightly tender swelling which gradually softens and which ultimately heals after evacuation, is a complication of typhoid sufficiently common to be generally recognized as such. When, however, the vertebral bodies are involved, since there is no external manifestation of disease and since the dominant picture is pain, particularly aggravated by motion, the relation of this condition to the preceding typhoid fever is often unsuspected, and the treatment may be that least calculated to bring about the cure which these patients can all expect, providing the methods now established as standard are followed out.

It is to the credit of Elkin and Halfpenny (*British Journal of Surgery*, April, 1914) that they have been able to collect 94 cases of typhoid spine. Pain usually came on during convalescence—in at least one case five months after. There was no cause of onset in the majority; it was usually gradual, but in about 50 per cent more or less acute. As to location it was lumbar in 14, dorsolumbar in five, lower dorsal in one, and in the sacroiliac joint in one. There was a slight elevation of temperature, the highest being 103.4°. There was usually no swelling over the affected vertebra, but in more than half the cases a definite tenderness. The *x*-ray reports seem to show an effusion beneath the periosteum or the anterior and lateral ligaments and around the costal joints. The indicated treatment is rest in bed and mechanical support. All the cases made an almost complete recovery. This in marked contrast to tubercular spine.

The clinical lesson to be learned from this excellent study is to the effect that severe pain often referred to the belly, at times associated with areas of anesthesia, at times with persistent or recurring spasms of abdominal muscles, should with a history of

preceding typhoid fever suggest at least the diagnosis of typhoid spine and should be treated by immediate rest by splinting and bed. Considering the course of periostitis developing in other bones it is remarkable that in not a single instance has there been formed an effusion which required evacuation. As a part of the unpublished history of this affection there are undoubtedly some cases in which because of the reference of pain to the abdomen fruitless abdominal operations have been performed.

SOLUTION FOR RECTAL AND INTRAVENOUS INJECTION.

In practically all clinics the world over it is the custom to give after any formidable operation rectal injections, usually of normal salt solution. When there has been hemorrhage or pronounced shock, and the need of promptly increasing blood-pressure is more urgent, the solution is given intravenously. The effect is most beneficial. Thirst is quenched, and the kidneys are stimulated to activity, both directly by the absorption of the fluid and indirectly by a reflex incident to the injection itself. Toxins are eliminated, and the postoperative course of patients thus treated is as a rule much smoother and more comfortable than is the case in which such rectal and intravenous injections are not given. Moreover, the postoperative and post-traumatic mortality has been distinctly lowered.

There are, however, certain dangers connected with the method which are not generally recognized. It is possible by a too continuous and forceful enteroclysis to produce a pronounced edema of the gut; by a too rapid intravenous injection to throw a burden upon the right heart with secondary lung edema which may in itself prove fatal. The large salt content of a copious enteroclysis or venoclysis, 9 pints in twenty-four hours if the physiological solution be used (.75 per cent), is distinctly irritating to the kidneys. Moreover, Schiassi *(La Semaine Médicale,* tome xxx, No. 50, 1913) observed as a consequence of this saline treatment a progressive and at times an irremediable adynamia. He quotes Löb and Osterhout to the effect that normal salt solution occasions an impoverishment of calcium and potassium in the cellular elements, particularly of the nerve tissues, Novy having shown that in the case of calcium a 50-per-cent reduction may be noted. Since calcium exercises a tonic action on the nervous system it is obvious that a diminution of this element accomplished by means of normal salt injections may produce a profound depressor influence. It is because of these considerations that Schiassi has made certain combinations which theoretically and clinically in his hands have shown their great usefulness. In the first place he lessens the quantity of sodium chloride to 650 in place of 750 to the 1000, and adds a definite quantity of potassium and of calcium. This is not only tonic, but increases the coagulability of the blood. Moreover, since surgical operations are peculiarly prone to develop the initial phenomena of an acidosis, he adds bicarbonate of soda and finally glucose because of its diuretic, tonic, and cardiotonic properties, which are peculiarly inherent in this substance. His formula for intravenous injection is as follows:

Chemically pure chloride of sodium, 6.50;
Chloride of potassium, 0.30;
Chloride of calcium, fused, 1.00;
Bicarbonate of soda, 0.50;
Glucose, 1.50;
Distilled water, 1000.00.

If the solution is for the purpose of rectal instillation, the quantity of glucose is increased from 1½ to 50 grammes and pure ethyl alcohol is added in the proportion of 15 grammes. Schiassi distinctly prefers the rectal method of injection because substances being absorbed by the portal circulation undergo a proper transformation in the liver. Moreover, a greater quantity of liquid cannot be introduced by this route than is actually called for by the needs of the general circulation. As to the ethyl-alcohol, Schiassi has apparently shown that it favors the penetration of the liquid

through the intestinal coats and augments its diffusibility.

In some few clinics especial attention is devoted after operation to examination of the urine with the view of detecting an acidosis, diacetic acid, acetone, and oxybutyric acid being often found before the clinical manifestations of this condition become apparent. Since this condition urgently calls for the prompt administration of an alkali the usual routine is to administer by enteroclysis a 2-per-cent sodium carbonate solution. In addition to its diuretic and cardiovascular effects glucose serves well in providing energy to patients profoundly emaciated and weakened by a long standing previous disease. Its rectal administration during the postoperative period when the stomach is non-retentive may under such circumstances prove life-saving. Nor is there any difficulty about its prompt absorption and rapid utilization.

REPORTS ON THERAPEUTIC PROGRESS.

THE TREATMENT OF THE SUMMER DIARRHEAS OF CHILDREN.

CRANDALL in the *New York Medical Journal* of July 11, 1914, tells us that two facts indicate very clearly the line of dietetic treatment of summer diarrhea in infancy:

First, digestion is at a standstill; secondly, the food, be it never so perfect, is prone to become infected in the digestive tract and continue the fermentation. The old illustration of fresh milk in a sour bottle cannot be too frequently repeated. Be the milk or the food never so fresh and perfect, it will undergo putrefaction when brought into contact with putrefying matter.

The indications for feeding, therefore, are clear: First, keep all food out of the digestive tract as long as possible; secondly, in resuming the food select that food capable of the least chemical change and putrefactive action. The changes in the food may be either fermentation of the carbohydrates and hydrocarbons, or putrefaction of the protein elements. Therefore, milk should be positively interdicted in summer diarrhea. It is true that milk is an admirable food for children. It is also true that beefsteak and potatoes are an admirable food for adults, but when the adult is stricken with fever, diarrhea, and vomiting, the beefsteak and potatoes are eliminated from the diet. The reasons for eliminating milk from the diet of the child under similar conditions are equally strong, but do not seem always to be recognized by practitioners.

At the outset of an acute diarrhea, therefore, all food should be prohibited, but water should be given freely, unless it induces vomiting. Even if a part of it is vomited, it is best to give some, for a portion may be retained and aid in preventing depletion of the tissues by excessive watery stools. Milk should be resumed with great caution and sometimes must be long withheld. Even a wet-nurse is not to be sought in the first stages. Among the substitutes are barley-water or rice-water, which should be dextrinized for very young children. Thin broths made of chicken or lamb may be tried, and later farinaceous foods may be added. Some of the malted foods may aid in tiding over the crisis, and some of the proprietary beef extracts or foods may answer the same purpose. In some instances matzoon or kumiss may be tolerated before plain milk can be borne. In few other conditions must more judgment be used than in the selection of food after one of these diarrheal attacks. Repeated attempts may alone give the only solution of the problem. Attempts must be made cautiously and with diluted food, and the physician must feel his way in each case.

The medicinal treatment should follow the indications already referred to. As a rule a laxative at the outset is strongly indicated. Castor oil has time out of mind

been the standard and is usually the one to be selected, as it does the work required more efficiently and more easily than any other. When the stomach is irritable, however, it is sometimes not retained and is usually repugnant to older children. A saline may fulfil the requirements very well. Citrate of magnesium and Rochelle salts are among the best. When the stomach is irritable, calomel in small divided doses is frequently the laxative to be chosen. It will sometimes quiet the vomiting and relieve the bowels more perfectly than any other remedy. A laxative may be indicated at intervals throughout the disease. If the passages diminish or cease and the temperature begins to rise, a laxative should at once be administered. In these later stages the salines are especially useful.

The type of disease should influence largely the treatment. Several years ago Crandall made an extensive study, based on 3000 cases, of the types of summer diarrhea prevalent in New York. In the last half of June and the first half of July the prevailing type is the serous diarrhea, marked by large watery passages, ranging from a few up to twenty or thirty a day. During the following six weeks these serous cases are comparatively rare and true enterocolitis is more common. This means that the acute cases of the earlier summer have settled down to a true organic or inflammatory disease. During August the passages are of the thicker and more grumous type. New cases are much less frequent than in the earlier summer. In the late summer and early fall, colitis appears and the passages are of the so-called dysenteric type. They consist largely of mucus and blood and are accompanied by tenesmus and high fever.

In cases of the serous type, with twenty or thirty large movements a day, it is often a question whether it is wise to administer a laxative. One is sometimes in doubt as to whether it is not better to check the profuse loss if possible. In the other types, however, there is no question whatever of the advisability of sweeping the intestinal tract clean of all putrefying material. When mucus and blood appear in the stools, castor oil should be given and persisted in, even at the expense of some nausea and vomiting. We have no other agent which will accomplish the results obtained by castor oil in those conditions.

Astringents, so much used in the past, are irrational and ineffective. The mere checking of the number and size of the passages is not what we should primarily seek. When that end can be attained by removing putrefying matter and restoring a normal condition it is very desirable, but the mere constringing of the intestines and imprisoning of poisonous matter is the last thing to be desired. Occasionally with an excessive choleraic state or in a colliquative condition, in the later stages, Crandall has resorted to a few drops of pernitrate of iron, but the necessity of this treatment is very rare.

The fact that these summer diarrheas are due largely to germ action naturally led to the feeling that antiseptic measures should be employed. They have on the whole proved almost as disappointing as the astringent treatment. Most antiseptics are absorbed before they reach the source of infection. The possibility of disinfecting a twisted and corrugated tube twenty feet long, by any antiseptic which will not at the same time kill the child, has thus far proved visionary. Still something can be done by antiseptics, and some practitioners use them to a considerable extent. Salol, resorcin, and the salicylates have been the most commonly employed. Salol will not diffuse in a mixture and is difficult of administration to a young child. Resorcin must be given with caution, and it does not penetrate far into the intestines. The salicylates are absorbed in the stomach and are prone to irritate that organ. Bismuth is insoluble and the only drug which will be carried through the intestinal canal. It has come to be largely used, and Crandall believes it to be the most efficient remedy in diarrhea. The subnitrate is probably the most largely employed, but he prefers the subgallate, particularly if there is gas or flatulence. The dose of either should be

larger than those formerly given. Three grains may be given every two hours to a child of one year. Crandall usually prescribes it with a few drops of chalk mixture without mucilage. The addition of ten drops of aromatic syrup of rhubarb to the prescription is sometimes advantageous and renders the mixture somewhat more palatable. Bismuth, either alone or with some simple adjuvant, is to-day the most commonly used drug in summer diarrhea. Opium is one of the most valuable remedies in the treatment of diarrhea. It has been so much abused, however, that some practitioners have become imbued with the belief that it should not be employed. This is too sweeping; it must be employed with especial intelligence.

Intelligent use of any drug requires a knowledge of its physiological actions. This is particularly true of so complex a drug as opium. A brief review of those actions is, therefore, not out of place. The following are the most important: It stimulates the heart; weakens the respiration by acting upon the respiratory center of the medulla; blunts the sensory nerves; decreases the secretion of the digestive tract, the bronchi, all the mucous surfaces, the liver, and various glands; increases often the secretion of the skin and kidneys; decreases the action of unstriped muscular fiber, thus checking peristalsis and intestinal spasm, and spasm of the ducts. It requires no argument to prove that a drug possessing such varied and apparently contradictory powers can be used heedlessly only with disastrous results.

In diarrhea the actions chiefly desired from opium are its power to relieve pain, to stimulate the heart, to decrease the secretion of the intestinal tract, and to check peristalsis. Of these the first and last are the most important. When the disease has continued for a long time, and the colon and rectum have become irritable, so that small, frequent, nagging movements occur, an opiate may do much to check the disease, and may aid in preventing the child from wearing out. It may also be used in small doses in cases in which the bowels act as soon as food is taken into the stomach. In these cases the child seems to wear out because the rapid passage of the food through the alimentary canal does not permit of digestion and absorption. A study of these conditions seems to warrant the following conclusions regarding the indications for the use of opium in the diarrheal diseases of children:

It is contraindicated (1) in the first stages of acute diarrhea, before the intestinal canal has been freed from decomposing matter; (2) when the passages are infrequent or of bad odor; (3) when there is a high temperature or cerebral symptoms are present; (4) when its use is followed by increase of temperature or the passages become more offensive.

It is indicated (1) when the passages are very frequent, with pain; (2) when the passages are excessively frequent, large, and watery; (3) in dysenteric diarrhea, in which case it should be preceded by castor oil or a saline; (4) in late stages with small, frequent, nagging passages; (5) when the passages consist largely of undigested food, and the bowels act soon after the food is taken into the stomach.

The method of administration is important. The opiate should not be added to the ordinary diarrheal mixture, which is usually repeated at short intervals. It should be given alone; the dose can thus be regulated with much more certainty. This permits of the diarrheal mixture being largely increased if the exigencies require. Intervals should be sufficient to permit the effect partially to subside before the dose is repeated. They should rarely be less than three hours, while four hours is more commonly advantageous. Lack of precision and exactness has been the cause of much of the harm that has resulted from the use of opium in diarrhea. Opium is too potent a drug to be administered with the inexactness with which chalk mixture, bismuth, and the astringents are commonly prescribed. The dose varies greatly, and it is impossible to lay down positive rules. It should be as small as possible, the object being to check peristalsis and relieve ex-

cessive pain. Narcotism should be strictly avoided. The preparations most available for young children are paregoric and the deodorized tincture. As a general rule, one minim of paregoric (equivalent to two drops) may be given for each month of the baby's age. At one year three-fourths of one minim of the deodorized tincture is a full dose, or three-fourths of a grain of Dover's powder. The initial dose of opium should be small, and its effects should be noted before it is repeated.

ADRENALIN-PITUITRIN THERAPY.

P. ROHMER (*Münchener medicinische Wochenschrift,* June 16, 1914) states that in the Universitätsklinik at Marburg they have been using a combination of adrenalin and pituitrin with most satisfactory results in acute conditions, such as pneumonia, diphtheria, and typhoid fever, and from their experience they feel justified in recommending pituitary extracts, hitherto extensively used only in obstetrical cases, in a combination with adrenalin in acute diseases of the circulatory system.

As is well known, a serious objection to the use of adrenalin by itself, especially its intravenous application, is that the increase of blood-pressure produced is only temporary and is soon followed by a fall, sometimes menacing, below the original figure. The subcutaneous injection, on the other hand, is unsatisfactory inasmuch as it takes several hours for only a small part of the substance to enter into the circulation, about 94 per cent being used up at the site of injection, which accounts for the large and oft-repeated doses which can be given with impunity.

Animal experimentation has shown that the action of intravenous injections of adrenalin preceded by or combined with pituitary extract is very favorably influenced. Kepinow was the first to show the difference in the action of these two substances.

As a result of Kepinow's studies Matthes was led to use the combined treatment at the bedside, with satisfactory results. The author also has been using it for the past few months on children of all ages, and was able to demonstrate its efficiency in severe circulatory disturbances, such as pneumonia, diphtheria and typhoid fever. The dose administered to young children was 0.25 Cc. of a 1:1000 pituitary preparation combined with 0.5 Cc. of a 1:1000 adrenalin solution. The dose may safely be doubled for older children, and any of the commercial preparations may be used.

A comparative study of the action of the various preparations at the bedside is not so easy. The results reported vary from two to six hours with regard to the duration of the adrenalin—*i.e.,* in which a second dose is required—the variation being furthermore complicated by individual idiosyncrasies. The same holds good for the two substances combined. The fact that in these serious conditions one is loath to forego the use of other therapeutic measures prevents an exact estimation of the action of the adrenalin and represents another difficulty of an already difficult situation. The author usually administered the combined drugs (dose as above) at intervals of six hours, supplementing them with an injection of camphor or caffeine during the interval. The results were satisfactory beyond all expectations in desperate cases of pneumonia, and particularly in a serious case of diphtheria. In the latter a temporary remission of the adrenalin-pituitrin and the retention of other treatment produced a grave crisis, which was promptly relieved by a renewal of the organotherapy. In a case of pneumonia in an eighteen-months-old infant camphor failed utterly to give results, so that medication was limited to adrenalin and pituitrin. During a severe collapse blood-pressure, which before the injection stood at 60 with a pulse of 200, increased to 80 in two minutes, to 90 in the next two minutes, and in another 15 minutes sank to 85, remaining around 80 during the next five hours—until the next injection—with continued improvement in the general condition. Careful control of the pulse and blood-pressure in this case showed that the duration of the combined

action of adrenalin and pituitrin is about six or seven hours.

It is hoped that this brief communication may serve as a standard for the use of this combined therapy.

ACCIDENTS DUE TO SALVARSAN AND THE VALUE OF ADRENALIN.

In the *British Medical Journal* of May 9, 1914, EHRLICH, while not knowing the exact symptoms of a patient who recently died in Guy's Hospital, and therefore not taking up the discussion of the case, does not, however, neglect the opportunity to explain in a few lines the views at which he has arrived as to the origin of the nervous phenomena after salvarsan injection, and in particular encephalitis hemorrhagica.

The phenomena mentioned are indeed happily rare, but their origin is extraordinarily complex. In his address at the London International Congress he explained in detail that he associates these cerebral symptoms with syphilitic processes (especially the presence of spirochætæ in the meninges—that is, in the capillaries of the brain), and believes that through the dissolution of the spirochætæ and the escape of the endotoxins certain alterations occur, which only find expression after an incubation of several days.

The essential point in hemorrhagic encephalitis is a colossal dilatation of the vessels in the affected part of the brain, which may lead later to edema of the brain, and to perivascular bleeding. The dilatation of the vessels is, in his opinion, in close connection with the salvarsan injection. He believes that the vascular system, altered by the endotoxin, is not indeed oversensitive to salvarsan as such, for otherwise the condition would appear immediately after the second injection (and the illness occurs especially upon the second injection of salvarsan), whilst it generally shows itself two days later.

The delay indicates that here a derivative of salvarsan has come into action, and he has previously expressed the view that this is an oxidation product, paraminophenylarsenoxide, to the irritative properties of which he has from the first directed attention. The formation of paraminoarsenoxide is favored by all forces which cause a delay in salvarsan excretion, such as an overdose or presence of kidney disease. Under these conditions larger quantities of salvarsan than usual may remain behind in the organism, and succumb later to oxidation, forming the dangerous oxide.

But from the latest occurrences it seems probable that yet a third factor enters into the matter, which is perhaps the most significant.

The irritated vessels only undergo dilatation of so colossal a character under the influence of the arsenical substance, when the normal regulator of the vascular system, adrenalin, is present in insufficient quantities in the blood, as is the case in Addison's disease, and in hypoplastic processes occurring in the suprarenals (status thymolymphaticus).

Milian (Paris) has done a great service by discovering the significance of adrenalin in a number of salvarsan accidents. He showed that the accidents described by Hoffman and Jaffé and Moirowsky, which developed immediately after the injection of salvarsan, and were characterized by blue-red swelling of the face, lips, and eyes, and by dyspnea, etc., may be completely avoided if adrenalin be injected before the salvarsan injection. He showed, further, that severe diarrhea and suppression of urine, threatening life, which occurred after salvarsan injection, were cured by an injection of adrenalin. Supported by these observations Milian has, by means of energetic adrenalin treatment, saved an otherwise hopeless case of encephalitis hemorrhagica, in which on the second salvarsan injection the deepest coma ensued.

A further favorable result has been obtained by Privatdozent Dr. F. Pinkus in Berlin, in a case not quite so severe, and recently Dr. Milian informed Ehrlich that Professor Fiocco, of Venice, had obtained still another success; in a case dangerously ill after salvarsan the coma disappeared after four injections of adrenalin, but after

twenty-four hours it returned, and it was only after further treatment with adrenalin that the patient recovered. This case is, in Ehrlich's opinion, absolutely conclusive, since after the favorable result of the second course of adrenalin injections it is to be taken as certain that the relapse of the coma was only due to excretion of the adrenalin between the first and second courses of injections of adrenalin.

Ehrlich draws from these observations the hope that it will be possible, through a vigorous adrenalin treatment, to overcome this scourge of the salvarsan therapy in, it is to be hoped, a very large percentage of the cases.

It will be seen from the above remarks that he is absolutely against the view that the brain swelling (Hirnschwellung) signifies a simple arsenic intoxication, as has in several quarters been supposed. Ehrlich believes, on the contrary, that we have to do here with a very complex process, consisting of at least three links, the details of which are now known to us, so that we can now avoid it, or, should it appear, combat it successfully in most instances.

The patients specially threatened with encephalitis hemorrhagica are, as is known, those in whom the brain in the early secondary period of syphilis is flooded with spirochætæ. Ehrlich has, during recent years, over and over again insisted that in these conditions we must not attack the disease with a bludgeon (mit Hammerschlägen) in the form of large doses, but must gradually steal in and get rid of the parasites gradually. For this purpose, in such cases—as is done, for instance, by Gonnerich—a thorough course of mercury should precede the salvarsan treatment, and the dose chosen for the first injection of salvarsan should not be high. Ehrlich's views on this point are summarized in the book of Meirowsky and Kretzmer.

When all the above-mentioned precautions are followed we may cherish the certain hope that the number of cases of encephalitis will no longer give occasion for hesitation. But should a threatening condition, in spite of all, ensue, the observation of Milian gives us a means whereby even here, through energetic and systematic treatment with adrenalin, it is possible to save the patient. A single injection is, in such conditions, naturally not enough; we must give the adrenalin treatment as strongly as possible and as long as is necessary to obtain the desired result.

It follows from what has been said that the demonstration by chemical examination of arsenic in the organs can offer no explanation at all of the etiology of this form of illness, for it is obvious that a few days after a salvarsan injection arsenic must be present in the organism. Such an examination would be of value only if it were possible to decide in what form arsenic was present in the organism, whether as unchanged salvarsan, or in the form of the poisonous oxide, or—which does not seem to Ehrlich probable—in the form of split-up arsenous acid. But a solution of this problem is, at the moment, not possible.

THE INFLUENCE OF ADRENALIN ON RESPIRATION.

In the *American Journal of Physiology* of June 1, 1914, Nice, Rock and Courtright in studying this subject reach these views:

1. The effect of adrenalin on respiration occurs synchronously with that on the circulatory system.

2. Doses of adrenalin which cause a fall in blood-pressure elicit an increase in the depth of respiration. This increase may or may not be preceded by a shallowness.

3. Within limits, doses of adrenalin which produce a rise in blood-pressure cause an increase in the depth of respiration. This increase, again, may or may not be preceded by a shallowness. The increase is proportional to the rise in blood-pressure and to the amount of adrenalin given.

4. Excessive doses, as Oliver and Schäfer and others have shown, produce a marked shallowness in breathing. Within limits the shallowness is proportional to the effect on blood-pressure and to the amount of adrenalin given.

ARTIFICIAL PNEUMOTHORAX IN THE TREATMENT OF PULMONARY HEMORRHAGE.

GRAY, in the *Chicago Medical Recorder* for May, 1914, reaches these conclusions:

1. Lung compression is indicated in severe pulmonary hemorrhage cases.

2. It should be made, in severe hemorrhage, as soon as possible, to forestall the always fatal bronchopneumonia.

3. It is of no avail once bronchopneumonia has become established.

4. The lung should be kept in compression for at least four months.

5. And lastly, aside from the value of compression of the lung as a hemorrhagic agent, one cannot underestimate the influence of prolonged rest on the tuberculous process.

TREATMENT BY RADIUM.

The very live subject as to the exact value of radium as a remedial agent is summed up by the London *Lancet* of May 23, 1914, as follows:

In a leading article in the issue of the *Lancet* of January 17 last, the ever-interesting question of radium and cancer was referred to. The remarks then were prompted by the appearance in the lay press at that time of statements which were considered to be scarcely justified by known facts, and not unlikely to cause grievous disappointment to many sufferers from malignant disease. The report of the Radium Institute for the year 1913, which was published two weeks ago, is an interesting confirmation of the attitude the *Lancet* took up four months ago, and in their opinion provides the strongest possible argument for the necessity of observing extreme caution regarding the value of radium in the treatment of malignant disease. A careful study of the tables gives many interesting points for consideration. During the year 972 cases were dealt with; of these, 112 were examined but not treated. Of the remainder there were about 490 cases of malignant disease, including 111 of rodent ulcer. Of these cases of malignant disease none are stated to be actually cured, although 50 are described as apparently cured and 183 as "improved." In a number of cases the results are not yet noted, whilst others received prophylactic treatment only. At first sight the figures may seem disappointing, especially to the whole-hearted radium enthusiast, but further consideration of the report reveals much that is encouraging.

In the first place it is the sound policy of the Radium Institute to decline to treat operable cases, and this is rigidly adhered to, except under most exceptional circumstances. Radium is thus used only as a last resort, and the fact that so many of these cases can be described as "apparently cured" is highly creditable to the work of the Institute. Time alone can show if any of these satisfactory results are permanent, and not until some years have passed without fresh manifestations of the disease could even the most favorable cases be described as "cured." A further reason for the necessity for patience in accurately estimating the results attained is furnished by the following statement taken from the report: "Little or no effort appears to be exerted in the prevention of metastatic deposits, though the treatment does not, at any rate, hasten their dissemination." The action of radium being thus a purely local one, its field of usefulness must be necessarily limited, and especially so in regard to the treatment of malignant disease. At the same time the improvements in methods and technique that have taken place are extending the useful application of radium, some of them sufficiently remarkable to call for special comment. It has been observed, for instance, that some cases in which pleurisy depended upon carcinomatous invasion of the pleura have been greatly improved by radium, and after a preliminary paracentesis the further formation of fluid has been effectually prevented. In carcinoma of the uterus again most gratifying results are being obtained, and in most inoperable cases these are far in advance of those obtained by any other known medical

and surgical methods. Much inferior, however, are the results in cases affecting the moist mucous membrane, especially about the mouth and throat, but even here improved methods are holding out greater hopes of success.

It is a curious fact, upon which the *Lancet* has commented previously, and which is borne out in this report, that cases apparently alike responded so very differently to radium treatment, and this applies also to the same variety of tumor affecting parts that are anatomically closely related. Cases affecting the uterus, bladder, nd upper portion of the rectum do better than those situated nearer the sphincters. These and many other instances tend to show how many difficulties have to be overcome and how the technique of the applications has to be studied and modified to suit constantly varying conditions. All this means much work and time for proper elucidation and serves to prove that real advancement in radium therapeutics must necessarily be slow, and that the day when we can speak of radium as a "cure" for malignant disease is still a long way off. They venture to hope that the publication of this report will do much to steady opinion on this question, not only within the medical profession, but also among the public.

Turning to other aspects of this report, it is satisfactory to see that some progress has been made in dealing with mediastinal tumors. Naturally large quantities of radium are necessary, and thick filters and long applications are the order of the day, but the results are such as give promise of benefit. It is only when we come to the treatment of non-malignant tumors that the medical superintendent of the Institute, Mr. Hayward Pinch, allows himself to make use of the word "cure" regarding the result of his treatment. The number of these conditions that are easily cured by radium is now very large, and the fact that it can be used effectively in places not favorable to operation constitutes one of its greatest triumphs. Another important feature of radium that seems now to be fairly well established is the anesthetic effect exerted by it in certain superficial conditions attended with pain or irritation. Painful keloids, pruritus, and lichenfication of the skin are among those which have done well under this treatment. With regard to the efficacy of the solution of the emanation, about which so many conflicting statements have been made, this report has not very much to say. Apparently, however, the indications are that in early cases of arthritis deformans, or in those in which the changes are periarticular, the administration of this solution yields favorable results, especially in patients under forty years of age. Little or no improvement is to be looked for in cases in which the osseous and cartilaginous changes predominate, and the report distinctly states that much research work remains to be done before any accurate opinion can be formed as to the therapeutic value of radium emanation solution, or as to the manner in which these changes are brought about.

Sir William Ramsay, since the use of radium has become more general, has always recommended the application in the form of niton rather than as a salt of radium, on the ground that in the latter case there is considerable risk of loss of the precious radium, while this method does not insure a continuous application, as for example, through the night. As he points out in a paper which was published this week, the production of niton from radium is continuous; it goes on night and day, and the radiating power of niton is 75 per cent of that of the radium from which it is derived. Niton can be used at any moment when its "strength" is known accurately, and a curve can be sent to the user which will enable him to know exactly what he is doing when he applies the active material. Sir William Ramsay describes for this purpose the introduction of niton into appropriate forms of apparatus—*e.g.*, tubes, bulbs, and hollow flat disks. The convenience and economy of the method are evident, and it is agreed that these practical suggestions are a further argument in favor of having a central institute where a large supply of radium is kept, and from

which frequent "drawings" of niton can be made, rather than of parcelling it out in small quantities, and having to be contented either with weak doses or to wait long for a strong dose at considerable pecuniary sacrifice. In other words, the niton method of application provides for the supply of a standardized agent. Taken as a whole the report of last year's work of the Radium Institute is a record that adds very much to the accurate knowledge of the therapeutic value of radium; and the sober, judicial manner in which it is expressed will do much to inspire confidence in the future of radiotherapeutics.

DIRECT TRANSFUSION OF BLOOD WITH SPECIAL REFERENCE TO ITS USE IN PERNICIOUS ANEMIA.

SPEIDEL, writing in *Northern Medicine* for May, 1914, reports on this method. He asserts that an improvement followed each transfusion, the maximum improvement coming eighteen days after the third operation. The operations were undertaken with no great hope of success, but only with the idea of leaving no stone unturned, and hoping that by this means, when all others had failed, they might possibly stimulate the blood-making organs sufficiently to tide over a relapse into one of remission. It must be borne in mind the change which frequently occurs spontaneously, or after simple symptomatic therapy in equally severe cases, and we must recognize that the administration of the treatment and the beginning of remission may occur at the same time purely as a coincidence.

That this is a measure of palliative value Speidel believes the records of this case clearly show. The beneficial effects, positive though temporary and used finally as a means of tiding a case *in extremis* over a relapse, are justifiable. When we look for an explanation of the favorable effect of the blood transfusion no satisfactory one can be found. To attribute the result to the introduction of living blood on the supposition that it is capable of taking up a part of the physiologic function is not compatible with the fact that extremely small quantities of blood have been found sufficient. Ewald suggests the hypothesis that the injected healthy blood acts as an antitoxin to an unknown poison circulating in the organism in progressive pernicious anemia.

Speidel asks: With this lack of a theoretical foundation, what are the indications from the experiences so far reported for the employment of blood transfusion in progressive pernicious anemia? In cases which manifest a severe but not an immediately dangerous condition, other therapeutic measures should first be tried, especially arsenic, "606," etc. Only when these produce no result or their employment is impossible and the disease symptoms are evidently progressive, is transfusion to be done. It is likewise indicated in all severe exacerbations, in threatening collapse, and naturally in coma. When done with care no objection can be raised against it. From the observations so far made no injurious effect has been found apart from transitory incidental symptoms.

TREATMENT OF TUBERCULOSIS BY PNEUMOTHORAX.

MURPHY, in the *Chicago Medical Record* for May, 1914, asks and answers the following questions:

What are the changes which pneumothorax produces when properly and timely administered?

First, it lessens and lowers the temperature rapidly by the rest which is given the focus of infection, which is equivalent to the rest given to the lung by rest treatment.

Second, it stops the expectoration rapidly.

Third, with the expectoration and the absorption stopped, of which the temperature is a manifestation, the patient's general condition improves and he takes on weight.

Fourth, these patients are less likely to have recurrent hemorrhages. We have seen few hemorrhages occur after the administration of nitrogen has been started, or,

better, after the lung had once been compressed by nitrogen.

How often should the lung be compressed? It should be kept in a state of continued complete compression once you start the treatment, not occasionally half compressed; not given, as you will see in the literature, once every three or six months.

What occurs in the local lesion when the lung is compressed? Read Forlanini's and Gretz's reports of the pathology in the cases that died from other troubles, and you will find that it was the excessive deposit of connective tissue, with cicatricial encapsulation and contraction around the focus of the healed tuberculosis. This is exactly what should occur, and it is exactly what does occur in surgical tuberculosis in tissues that supply a local resistance.

In what cases should pneumothorax be used? In an early paper it was stated that it should be used in the single lobe cases. It has also been used in bilateral cases with striking effect by Brauer, who took it up after he had read Murphy's paper, and disseminated it throughout Europe, as Forlanini had never forced it as a treatment until after it was taken up by Brauer in Marburg.

Friedrich finally took up the idea of compressing the lung and permitting it to heal and contract by that colossal operation of removing all of the ribs and permitting the side to sink in. Then Cobb, Wilm's assistant, advised the operation of resection of three to four centimeters of the rib at the posterior angle, beginning with the first and going down to the seventh or eighth, and the division of all of the costal cartilage in front, with the removal of an inch or an inch and a half, or, in some cases, of all of the costal cartilage, so as to permit a falling in of the chest wall, and thus cause the lung to collapse. But they had to resort to these terrific operations in the cases that had not been compressed or treated in the earlier stage, where it was perfectly feasible, in the large percentage of cases, to produce a collapse of the lung without any other operation than the penetration of the chest wall with an exploratory hypodermic needle. If these able men feel that they are justified in doing that operation to permit contraction of the lung, why should we not use the insertion of the needle in the early cases, which is such a simple means? It is not formidable. It is simple and easy, and it is practically free from danger.

In reading the literature you will find many complications mentioned. First, that a number of foci of tuberculosis which had become adherent to the chest wall were separated and empyema resulted. Air embolism is also another danger which is pertinent. They have had more of these complications on the other side than is at all necessary or justifiable, but they will occur less and less frequently as we become accustomed to the simple technique of the treatment. It is a simple method. It is only a mechanical aid to nature in the process of cicatrization and encapsulation of a tuberculous focus in the pulmonary tissue.

The manometer of Dr. Gray is a valuable addition to the instrument used by Murphy, as it absolutely indicates and controls the pressure. It is excessive pressure in forcing in the air that has led to the evil results. The air should never be forced. It should be aspirated into the pleura by the patient, and that can be accomplished with the greatest ease if the case is timely treated, namely, in its initial stage.

INTRAVENOUS ANESTHESIA.

The *Journal of the Michigan State Medical Society* for June, 1914, contains an article by CANDLER in which he points out that general anesthesia by the intravenous method is not a twentieth century discovery. While not as old as inhalant anesthesia it is said to have been employed by Ore as early as 1872. Ore used chloral hydrate as the hypnotic agent in 51 cases, with considerable success. A number of fatalities discouraged its employment until taken up by Burckhardt in 1909. Five years ago this investigator attempted anesthesia intravenously on the human subject, after

prolonged experimentation on the lower animals. Chloroform was first used, but soon abandoned for ether, which was considered much the safer drug. One year later six surgeons at the Berlin Surgical Congress corroborated the work of Burckhardt. The intravenous method was first employed in America in the fall of 1912 by Honan, of the Metropolitan Hospital, New York. In February, 1913, Honan reported seventy-eight cases. Since this time the intravenous method has been employed in over 300 cases at the Metropolitan Hospital and elsewhere. Federoff collected 500 cases from three Russian clinics, in which (hedonal) 75 per cent in normal saline was used, in which cases there were no deaths which could be ascribed to the anesthetic. Kummell in his contribution to Keen's Surgery states that his experience with intravenous anesthesia has been so very favorable that he looked upon its general employment as "a consummation devoutly to be wished."

While even its warmest advocates do not anticipate the time when the intravenous method of administering general anesthetics will entirely supersede the inhalation method, there are special indications for its adoption. Among these are operations on the head and face in general, operations in the mouth or the pharynx, operations on the upper jaw, and tumors of the hypophysis. The advantages of the intravenous method in such cases as these are obvious, affording as they do an uninterrupted anesthesia, with the surgeon unhampered by the operations of the anesthetic. The prompt introduction of normal saline in operations attended by severe hemorrhage is frequently an advantage, not to be underestimated. Intravenous anesthesia has been found to work satisfactorily with patients who have become emaciated from chronic disease. The rule is to find in such patients the pulse better after the operation than before. Recovery from the anesthetic is prompt and devoid of nausea, which in itself is an obvious advantage, especially in serious laparotomies. Delayed effects of anesthetics after narcosis and after the patient has recovered from the shock are, Honan and Hassler maintain, worthy of more serious study than has hitherto been accorded them. Chloroform administration, for example, is sometimes followed by acute yellow atrophy of the liver, injuries to the heart muscles, or the development of an acidosis. All this is obviated in the administration of ether intravenously.

Further, in the old inhalation method it is necessary to have a saturation of the entire respiratory tract with the anesthetic agent before anesthesia can be produced. This fact accounts for the stage of excitement, the irritation of the respiratory mucosa, with the greatly increased amount of secretion, and the large quantity of anesthesia stored up in the tissues.

In intravenous anesthesia all this is changed. Our direct route into the blood stream eliminates the respiratory tract, the stage of excitement, nausea and vomiting, postoperative anesthesia, and pneumonia.

These are the varieties of intravenous anesthetics:

1. Hedonal (methylpropyl-carbinol urethane) is a white powder soluble in alcohol, ether, and water. Hedonal .75 per cent in normal saline produces a wonderfully smooth anesthesia resembling natural sleep and lowers blood-pressure. The objection to its use is the fact that a large number of red blood-corpuscles undergo hemolysis.

2. Paraldehyde 2.5 per cent with ether 3 per cent in normal saline also gives a smooth and rapid anesthesia, but increases blood-pressure beyond the limits of safety.

3. Isopral and ether 7 per cent in normal saline has proved to be the most satisfactory combination. Isopral (trichlorisopropyl alcohol) is a white crystalline substance closely related to chloral hydrate and lowers blood-pressure. Candler uses the isopral and ether 7 per cent in normal saline.

As to his technique Candler employs a modification of Honan's apparatus consisting of two glass cylinders, one within the other. The outlet is controlled by a two-way stop-cock. The anesthetic is administered as follows: Candler cuts down on

the median basilic vein of either arm, according to the convenience of the surgeon; a cannula is then inserted into the vein and the solution permitted to flow drop by drop. The solution of isopral is permitted to flow into the circulation first, to be followed by the solution of ether. The patient goes under the anesthetic quietly without the stage of excitement. The return to consciousness is almost as rapid, occurring practically when the anesthetic is stopped. The reflexes are observed to be practically the same as by the inhalation method.

The dangers ascribed to the intravenous method of administering general anesthesia are embolism and dilatation of the heart. These, according to Candler, have been overestimated and appear to be an objection more of a theoretical than of a practical nature. In his opinion there is no more danger in administering an anesthetic intravenously than in giving a solution of salvarsan or normal saline. Furthermore, the percentage of ether is fixed at the beginning of the anesthetic, and does not depend upon the anesthetist. In their three hundred cases at the Metropolitan Hospital there did not occur a single fatality.

It has already been pointed out that the advantages of the intravenous method in cases of operations about the head are considerable. It will be found advantageous in intestinal obstruction, in operations for ectopic pregnancy, in amputation, or in any cases of extreme shock.

To quote Kummell, "In the light of our experience intravenous ether anesthesia is a method which, providing the indications are properly observed, is superior to any other form of anesthesia. For many cases it is to be regarded as an absolutely ideal method, because aside from the fact that a small quantity of the anesthetic is employed, it has a distinctly stimulating action, which cannot be said of any other known method up to the present time."

The first time this method was employed in Detroit was at Harper Hospital, January 10, 1914. The patient, a case of cystic goitre, was operated on by Dr. Clark D. Brooks. The anesthetic record was as follows:

Anesthetic began	9:20
Anesthetic stopped	9:57
Anesthetic time	37 minutes
Operation began	9:23
Operation completed	9:57
Operation time	35 minutes
Blood-pressure before	160
Blood-pressure after	150

Quantity of ether used: 600 Cc. of 7-per-cent ether in normal saline.

PRESENT STATUS OF TYPHOID VACCINE IN PROPHYLAXIS AND TREATMENT.

Writing in the *Lancet-Clinic* of May 30, 1914, POTTER has this to say as to typhoid prophylaxis and treatment:

The vaccine treatment of typhoid in the hope of curing, shortening, or modifying the disease has been under trial for some time. The same vaccine is used as in the preventive treatment.

The vaccines, whether living or dead, and the toxins like tuberculin, are antigens —that is, they are not direct antagonists like the antitoxins, but act by stimulating the body to produce its own antibodies. Practically speaking they are toxins, and act as whips or spurs to the body. The general principle, therefore, obtains, that the more acute the disease, especially a generalized disease, the less likely are these antigens to be useful as curatives.

Typhoid is an acute disease, but it is rather slow moving, its greatest danger-point in most cases coming after two or three weeks. The self-immunization is slow and very variable in degree as well as in time. It would seem possible, therefore, to step in, especially during the earlier part of its course, with the antigen to intensify and hasten the self-immunizing process.

This is the rationale of the vaccine treatment. Several plans have been followed:

1. The method practically identical with the preventive method, giving the three doses at about seven-day intervals.

2. The same plan, but using smaller doses, namely, about one hundred million.

3. The use of small doses in close succession and continued throughout the disease: thus, twenty-five million every other day, for an adult. This method is, at least theoretically, irrational in that it does not seem to allow time for the subsidence of a negative and the rise of a positive phase. But it has seemed proper to try it.

Potter has used all of these methods in his hospital service. The number of cases so treated has been small, too small to allow of anything like reliable conclusions. In one instance, under the frequent small-dose plan carried out for two weeks, a typical relapse occurred, with ultimate recovery.

Aside from his own experience, a study of the reports of others has not seemed to him to present any very encouraging evidence of success with either of the three methods above described.

A fourth method has recently been followed and strongly urged by Chantemesse, of France. It is distinctly different from the others in that he advises not increasing but diminishing doses. His reason is, briefly stated, this: That along with the immunity there develops in the typhoid patient an anaphylaxis, making him more sensitive to the typhoid vaccine, and that, therefore, the succeeding doses should be smaller, not larger. The conditions are different from the healthy person undergoing the preventive inoculations. And he insists that always the doses for the typhoid sick should be much smaller than for the well.

He begins in the adult with forty to sixty million, diminishing each five-day dose by one-half, giving two to four such diminishing doses according to the progress of the case. The more sick—that is, the more typhoid toxic the patient—the less the beginning and the succeeding doses.

His argument is logical and seems strong, and the method worthy of further trial.

In conclusion, it may be said that vaccine treatment, as distinguished from the vaccine prophylaxis of typhoid, is still in the experimental stage, having yet to prove its value. And the best method of applying it remains to be worked out. Meantime, we must not forget the deceptive therapeutic experiences of the past, and must not draw hasty conclusions from a small number of cases.

DIFFICULTIES THAT THE ANESTHETIST HAS TO CONTEND AGAINST.

In the *Australasian Medical Gazette* of April 25, 1914, HORNABROOK in discussing this topic says that the progress of anesthetic work has been greatly retarded by the freedom with which even difficult cases are handed over to men of not very profound experience, and the willingness of the profession to shield itself, when a fatality does occur, under the plea that there was something abnormal about the patient or the anesthetic, instead of learning to combat that abnormality, and listening to men who have devoted a large proportion of their lives to endeavoring to improve the very unsatisfactory conditions at present existing. For some time past Hornabrook has been persistently advising anesthetists to keep to small doses of morphine and atropine as a preliminary to open ether work. This advice was not given for nothing, but was the result of close study of hundreds of cases extending over four years, and under various conditions, in the Melbourne Hospital, the Women's Hospital, the Eye and Ear Hospital, and in private work. The work was first started with 1/6 grain morphine and 1/120 grain atropine given from a quarter of an hour to one hour before operation. It was then found that this dose suited a large number of cases; there were others, especially anemic females, who showed signs of respiratory depression, not actually on the operating table, but from half an hour to one hour, and in some cases even longer, after the patient had been removed from the operating table in apparently excellent condition.

These cases caused him to reduce the dose to 1/8 grain morphine and 1/150 atropine, given from three-quarters of an

hour to one hour before commencing the anesthetic during the sedative stage of the morphine, morphine being first a stimulant, especially in small doses, secondly a sedative, and thirdly a respiratory depressant, so that by using the smaller dose there would be less likelihood of the morphine reaching the depressant stage. The atropine was also reduced, as it was found that in a few cases the 1/120 grain caused the tongue to become too dry, and that the tongue then showed a tendency to swell and obstruct the airway. Moreover, with the mouth too dry, the anesthetic is not taken so easily.

Having used the 1/8 grain morphine and 1/150 grain atropine with very satisfactory results, he then endeavored to reduce it still further, and started 1/12 grain morphine and 1/200 grain atropine, and though this gave very satisfactory results in a number of cases, it was not so uniform as the 1/8 grain morphine and 1/150 grain atropine, and, moreover, there was a tendency for a little too much moisture in the air-passages, a result nearly as bad as a too dry tongue. So they returned to 1/8 grain morphine and 1/150 grain atropine, and this is used as a routine practice in the Women's Hospital, the Eye and Ear Hospital, and in the majority of cases in the Melbourne Hospital. The above is Hornabrook's maximum dose for all cases over twelve years of age, male or female. He finds this quite enough for any case if given at the right time, viz., three-quarters of an hour to one hour before operation. This preliminary of morphine and atropine makes the giving of the anesthetic far easier on the part of the patient, a most important point, and undoubtedly lessens the tendency to shock, even in the severest operations, and certainly reduces the tendency to acidosis and postoperative vomiting. Postoperative vomiting has to-day become almost a thing of the past, certainly as a persistent event. In using morphine and atropine the anesthetist must not use chloroform as an anesthetic *per se;* if he is so foolish as to do so, then he is certain to have a fatality sooner or later, not actually on the table, but very likely arising an hour or more after the operation has been completed, and the patient will die of respiratory failure. If he does not have a fatality, then he will have something very near to it, and considerable anxiety. Both morphine and atropine are respiratory depressants, and the man who persists in the use of this combination is doing a very serious wrong, and if a fatality occurs he renders himself liable to grave censure, even if some excuse is found for him post-mortem in an abnormal condition of the patient.

Hornabrook had two fatal cases brought under his notice within the past twelve months, in which, in spite of the warning given above, the anesthetist had used 1/6 grain morphine and 1/120 grain atropine and chloroform as an anesthetic. Both cases were private ones, and females, and he has no hesitation in saying that their deaths were hastened by the method used, nor does he believe that either death would have occurred if the small dose of morphine and atropine had been employed, and open ether used as the anesthetic. Both fatalities occurred after the patient had been removed from the operating table.

Recently Hornabrook has had two cases reported to him. In neither case did a fatality actually occur, but both caused considerable anxiety, and again instructions were not followed out, but 1/6 grain morphine used, and chloroform employed as the anesthetic. The mere fact that a man may have a large number of apparently successful cases with 1/6 grain morphine and 1/120 grain atropine does not excuse him from using a smaller and safer dose, and, in Hornabrook's belief, quite as effective if given three-quarters of an hour to one hour before operation.

In cases of severe shock it is a distinct gain to give the patient 1/8 grain morphine and 1/150 grain atropine about ten minutes before starting the operation. This is done to get the benefit of the stimulating stage of the morphine, and open ether should be employed as the anesthetic.

Hornabrook uses morphine and atropine

for all his cases except short dental ones, postnasal and tonsillotomy operations. In the operation of enucleation of the tonsils, morphine and atropine given about an hour beforehand is of distinct advantage. The only exception to the use of morphine and atropine for operations of any duration is in those head cases in which there is any question of the respiratory center being out of gear, or the base of the brain involved; in these cases morphine must be avoided at all cost, though a small dose of atropine may be given with advantage.

The doses are as follows: Morphine 1/8 grain and atropine 1/150 grain for all patients over twelve years of age, and up to any age; morphine 1/12 grain and atropine 1/150 grain for eight to twelve years; morphine 1/20 grain and atropine 1/200 grain for 3½ to eight years; and it is advisable to use the tablets and not the made-up solution.

Hornabrook has used morphine and atropine for a patient as young as fifteen months, but he does not advise it, as he has not yet had enough experience to speak with any certainty in cases below 3½ years. Of course, open ether is the anesthetic used, and not chloroform, even in children.

The anesthetist to-day takes other means to lessen the consumption of anesthetic by the patient. With the head and shoulders slightly raised at a natural angle from the commencement of induction, and, if possible, throughout the operation, he finds he requires less anesthetic and has, moreover, something to fall back upon should any trouble arise. Immediate lowering of the head will cause a rush of blood to the brain with stimulation of the cardiac and respiratory center, without the necessity of resorting to artificial respiration.

When a patient is once surgically anesthetized, the complete shutting off of all light from the eyes, by means of a thick towel or bandage, makes it very much easier for the anesthetist to maintain a successful anesthesia, and with a smaller consumption of anesthetic and less tendency to irritation of the air-passages, and also less tendency to postoperative vomiting. In the majority of instances the patient under operation lies with his face turned directly toward a bright light, and we all know how disturbing that is from our own experience when looking toward a bright light to feel the soothing effect, even when the lids are tightly closed. Personally, Hornabrook states, he never sees more of his patient's face than the lobule of one ear; attention is directed to this and respiration; the lobule of the ear shows trouble, whether cardiac or respiratory, at once, if any arise.

The whole object of the anesthetist today is to obtain a successful surgical anesthesia, using as little of his poisonous drugs as possible, and not seeing how much the patient will stand without killing him. By this means he helps considerably toward a successful convalescence, and should receive the thanks of the surgeon and patient; instead of which, if anything goes wrong, it is said to be due to faulty administration of the anesthetic.

There is one more word of warning, and that an important one. How many surgeons ever think of informing the anesthetist when they are going to use adrenalin, or even think of asking if they may do so? And yet the surgeon who does not do this is acting wrongly. For all he knows the anesthetist may be using chloroform as his anesthetic, and chloroform with adrenalin is a very dangerous combination, possibly due to the weakened action of the heart from the chloroform, the contraction of the arterioles from the adrenalin, causing an obstacle that the heart in its embarrassed condition cannot overcome, and a fatality occurs. Hornabrook would especially warn against plugging the nostrils with adrenalin and cocaine, and then following with chloroform as a general anesthetic. Adrenalin can, however, be used with ether.

Again, do not use 1/4 grain or even 1/6 grain morphine suppository immediately on the termination of an operation if the patient has had any preliminary injection of morphine and atropine before operation, for the reason that you may find it is quite unnecessary, and a more important reason

is that you are adding a respiratory depressant, which may lead to the necessity for artificial respiration after the patient has been removed to his room. It is far better and wiser to wait and give the suppository about five hours after the operation, when the danger is over. In a number of cases of hemorrhoids which have been under observation, it has been found, however, that the morphine suppository can very often be done away with.

THE TREATMENT OF GONOCOCCIC INFECTION BY PHYLACOGEN.

TALLARICO contributes an article in *Journal Médical de Bruxelles* of June 11, 1914, upon this subject. After pointing out the well-known theories which underly the employment of phylacogen, he shows that Greco of Milan first published a very interesting article in which he recorded remarkable results which he had obtained by the use of rheumatism phylacogen in eight severe cases of polyarticular rheumatism. Tallarico's employment of phylacogen has been limited to its use in gonococcic infections. Thus in a woman of twenty-eight who suffered from gonorrhea, and who had been treated by the ordinary measures for this disease, there developed as a complication arthritis with marked fever. Hot applications and other forms of local treatment failed. On the 10th of March he injected intravenously 0.25 Cc. gonococcic phylacogen, with a result that there was a rise in temperature and pulse-rate, but no chill nor sweat. On the next day, as there was no material improvement, he injected 1 Cc. On the 12th of March the swelling around the joints persisted, although it had not increased. The pain had diminished, and it was possible to touch the joints without inducing great pain. Upon injecting 2 Cc. there was a reaction characterized by a distinct quickening of the pulse and a rise in temperature. On the following day 4 Cc. were given, with a result that a more pronounced reaction was induced. Five days after the first injection the patient could flex and extend the involved joints without pain, the inflammation and swelling had considerably diminished, the temperature and the pulse were approximately normal, and the patient had a restful night. On the sixth day the record showed that the general symptoms and local conditions had ameliorated to a great degree. Nevertheless, Tallarico gave another dose of 3 Cc. Seven days after the first injection, although the patient still continued to improve, he gave 4 Cc., and on the eighth day another dose of the same amount, without inducing any reaction. Ten days after the first dose the swelling had gone and the patient could walk without any difficulty; nevertheless a dose of 5 Cc. was administered hypodermically without producing any reaction. Three weeks after the first dose the patient was completely well. After receiving, in addition to the doses already named, two hypodermic injections of 5 Cc. not only were there no joint lesions, but the gonococcic vaginitis had also entirely disappeared.

PROCTITIS.

Writing on this subject in the *Chicago Medical Recorder* for May, 1914, DRUECK tells us that the treatment of proctitis varies considerably with the exciting cause, and therefore, before instituting any treatment, a thorough examination must be made. The parts being irritated and inflamed, the examination is very painful unless an anesthetic, general or local, is administered. In many instances where for various reasons chloroform should not be given at the time of the examination, the patient may be relieved of most, if not all, of the pain by applying a two-per-cent solution of cocaine. A general anesthetic has much in its favor, because when the patient is asleep the sphincters may be thoroughly dilated, thus relieving the tenesmus and greatly facilitating subsequent examinations or treatment. At the same time any local trouble or cause of the proctitis may be removed, thereby accomplishing two things at one sitting.

Acute cases require absolute rest in bed,

because when the patient is up and about his duties the dependent position of the vessels together with the thinness of their walls and the associated congestion and inflammation produce a venous stasis which seriously impedes or prevents regenerative changes.

The diet should be plain and of such a variety as will insure soft or semisolid evacuations. It is also advisable to maintain a largely absorbable dietary, that the bowels may move frequently, thus sparing local movements of the parts. Twice each day the bowel should be douched with two quarts of cleansing solution as hot as can be borne. To begin with, a temperature of 105° F. may be used and the temperature raised each day. Drueck has devised a douche of his own to be used in these cases, because he has found it impossible to obtain a free return flow with any he has found, and unless the exit is large the fluid will pass up into the colon and carry the infection up with it, instead of washing it out. By practical experience he finds that douching in this manner washes out a large amount of infectious material, such as secretions, fecal accumulation, and hordes of microörganisms; dissolves mucus and pus, flushing them out as shreds; contracts the vascular structures, thereby stimulating circulation, and relieving the local congestion and depleting the tissues.

Following the douche, about two drachms of astringent antiseptics or other medicinal mixtures are injected and the patient instructed to retain it. Silver nitrate, hydrastis, glycerole of tannin or acetate of lead in various combinations and strengths, according to the case, are the most reliable drugs. If the pain and tenesmus are not relieved, laudanum and starch water may be injected every two or three hours until the patient is relieved. From twenty to sixty minims are often needed in this way.

Hot fomentations applied over the hypogastrium give much relief when the inflammation extends over a large area and when there is general, diffuse pain and tenderness. In mild cases limited to the lower end of the rectum, the applications of cold to the anus and perineum or the injection of cold water into the rectum relieves the congestion promptly.

When the proctitis is due to threadworms, injections of lime-water or salt water and the administration of santonin internally will be enough. Gonorrheal proctitis, like its counterpart in the urethra, is especially intractable. Silver nitrate solution 1:3000 should be used to douche the rectum, but the same conditions must be observed as are mentioned above in speaking of the rectal douche. The strength is to be gradually increased as a tolerance is obtained until a 3:1000 solution is used. Following the douche the whole mucous membrane is swabbed with balsam copaibæ, or a suppository containing balsam copaibæ and iodoform, each 5 grains, may be inserted.

The chronic forms of proctitis are somewhat different. Barring the very mild cases, it may be said that unless carefully treated they all become chronic. The douching should be instituted in these just the same as in the acute cases because of the alternating effect. The excessive secretion is controlled with applications of alum, zinc, or silver, or any of these combined in a suppository with iodoform or one minim of oil of turpentine.

When ulceration, periproctitis, or any other complication exists, that requires its own treatment, which cannot be entered into in this paper. Syphilitic cases are associated usually with strictures which may require surgical treatment, although Drueck asserts he has seen astonishing changes occur under general internal medication. Tubercular proctitis is usually secondary to disease higher up, and is accompanied with so much ulceration together with the general systemic infection that treatment is unsatisfactory. The treatment of proctitis due to cancer is surgical, of course, and cannot be considered here.

Proctitis in either the acute or chronic form is always a serious matter, deserving of the physician's most careful attention because the inflammation itself may debilitate, and especially because compli-

cations which may invalid the patient are prone to occur. Each case is a law unto itself, and this article does not go into the details that may perplex the attendant, but simply tries to give the reader a clear clinical picture in general and to lay down the main lines of treatment.

CHRONIC RECURRENT DIARRHEA IN CHILDHOOD.

POYNTON, ARMSTRONG and NAVARRO in the *British Journal of Children's Diseases* for May, 1914, assert that malabsorption is clearly a predominate feature in these illnesses, and we need not delay over the infantilism or extreme weakness of the lower extremities, or flatulent distention and general flabbiness and anemia, for we think this is a sufficient explanation. It is an interesting point that a considerable number of cases after reaching the age of five to seven seem in a mysterious way to outgrow the tendency to recurrent attacks, and to gain step by step a tolerance to a more generous diet; and one wonders in such cases to what extent the bowels remain permanently damaged, and whether the liver or pancreas or both acquire in some way a greater vitality, and thus aid in overcoming the celiac element.

The problem of the diet seems to us a very difficult one, for a study of their cases, and of others they have not recorded, seems to point to any of the chief articles of diet as being at one time or another harmful, although they think Herter inclines to the carbohydrates as the first offenders. Fat seems to stand first as the most difficult, yet some cases may take cream. Carbohydrates may be tolerated better than any foods at times when the condition is almost desperate, but often they are ill-borne, and if pressed appear to assist in causing distention in which the entire bowel is implicated. Broths and meat-juices are, perhaps, as likely to be dealt with successfully as any food, but with milk the most diverse results occur. In some cases milk seems most injurious, in others it has been the great standby. The dried milks have often been of service. Eggs are frequently disastrous, and again fish has been most unsatisfactory, and minced meat equally so. The malted foods are very likely to produce diarrhea. The wide-spread intestinal lesions prepare us to find that all forms of food may be difficult to assimilate. With them, in fact, it has been that in some cases a diet has been arrived at by bitter experience with the particular individual, and has been evolved quite empirically. They add that diarrhea is by no means an invariable symptom, for there may also be constipation, which may prove equally dangerous from consequent meteorism. Of all drugs, the one that seems to the authors after a prolonged experience to be the most generally successful is bismuth. They have had the most convincing proof of this in the fact that several mothers of much intelligence and unsparing in care of their children have come back asking for this when a relapse was threatening.

They do not pretend that it will cope with the worst cases, but it is, they believe, of the greatest value in the milder ones, although it is powerless to combat an unsuitable diet. Opium and gray powder have, as is well recognized, their times of value; and when the stage of convalescence is well established mild iron preparations are useful. The routine use of cod-liver oil and malt in the stages of remission may, in their opinion, precipitate an attack.

The remarkable tendency to great abdominal distention and the diagnosis in some of these cases of dilated colon raise the interesting question as to whether a condition allied to Hirschsprung's disease, or, indeed, whether some cases actually described as of this nature, are not to be ascribed to this peculiarly severe and chronic affection damaging the neuromuscular elements of the bowel. The course of events one would picture, then, is that the active disease has quieted down, leaving a much weakened gut, and constipation has resulted. This constipation has been neglected or permitted at first as a lesser evil, and thus added to the strain

upon the weakened bowel, with the result that an extreme degree of atony of some of the most affected parts has resulted.

The diagnosis from abdominal tuberculosis is not easy, and it is one of the valuable results of the examination of fatal cases that it proved conclusively that a condition at first considered more than once to be of a tubercular nature was undoubtedly non-tubercular. This particular point strikes one that the rapidity with which in this affection extreme illness is reached and the possibility of recovery from such an extreme condition on more than one occasion make a clinical picture unlike that of abdominal tuberculosis. The absence of tubercular masses in the abdomen is also another factor of importance. The occurrence in a few cases of general anasarca with ascites is very remarkable. The fatal cases also warn us against becoming stereotyped in our use of such terms in childhood as gastritis, gastroenteritis, and colitis, for there was evidence here of an affection of the entire alimentary tract beyond the esophagus.

Lastly, with regard to the bacteriology, it is clear that at present the results have been too diverse for us to see our way at all plainly, although the accurate investigations recorded are suggestive. To us the peculiar recurrent alimentary disturbance suggests an infective origin, but the acholia may very possibly be the result of some bacterial processes grafted upon the bacterial infection. The valuable investigations of Herter upon this point are of much interest, but at present they incline to the view that the celiac element was not in their cases to be looked upon as the essential element in the illnesses, and state as further evidence in support of this that celiac symptoms may develop abruptly in the course of a night after a sudden chill (a point commented upon by the late Dr. Cheadle), without evidence at any time of such a form of diarrhea as was met with in the cases related here.

They emphasize the fact that this contribution has been brought forward with the desire to learn both from the clinical and pathological side any facts that may assist us to deal with these exceedingly difficult cases more satisfactorily and understand their interpretation more clearly.

Finally they give a specimen of a full diet for a child aged three years with morbus cœliacus, upon which a gain of weight was obtained in hospital:

Breakfast at 5 A.M.: Bread, 2 ounces; butter, 3 drachms; fat bacon, ½ ounce; milk, 7 ounces. Fat-free diet: Bread and jam, 2 ounces; weak tea with 2 lumps of sugar, 7 ounces.

Lunch at 9 A.M.: Bread, 1 ounce; butter, 3 drachms; milk, 5 ounces. Fat-free diet: Biscuits with jam, 2 ounces; lemonade, 7 ounces.

Dinner at 12 noon: Mince, 4 ounces; pudding, 4 ounces; milk, 5 ounces. Fat-free diet: Fish or mince with potato, 6 ounces; bread and jam, 2 ounces.

Tea at 3.30 P.M.: Bread, 2 ounces; butter, 3 drachms; milk, 7 ounces. Fat-free diet: Bread and jam, 2 ounces; weak tea, 7 ounces.

Supper at 6 P.M.: Bread, 1 ounce; butter, 3 drachms; milk, 5 ounces. Fat-free diet: Bread and jam, 2 ounces; lemonade, 7 ounces.

One drink of milk at night of 7 ounces.

THE PLEA FOR IMMEDIATE OPERATION IN APPENDICITIS.

Within the last month the *Lancet* has received for review two important books on appendicitis and its treatment, which sufficiently prove that the surgical world has not arrived yet at a common view as to the measures to be adopted; the question of immediate operation or delayed operation is still alive, for there would be no necessity for the expressions of forcible opinions upon a settled matter. Some twenty-five years have now elapsed since the affections of the appendix first became at all widely recognized, though in medical literature we are able to trace here and there indications which go to show that the appendix as a source of disease was by no means so unknown as might be thought.

It is only since 1889 that the pathological importance of the appendix has been widely taught. At first the true frequency of the affection was not fully appreciated, but before long all came to understand that the appendix was responsible for many diseases which had been ascribed to other organs. Yet from the first there was a remarkable difference of opinion between many of those who had specially devoted attention to appendicitis. There were some who held that very many cases of the disease would recover spontaneously, provided that care was taken not to aggravate the condition by injudicious exertion, diet, or medicine, and that in only a small minority of cases was it necessary to have recourse to operative procedures, and therefore they believed that in nearly all cases the best treatment was to put the patient to bed, to regulate the diet, and to watch for signs and symptoms that the disease was proceeding in the wrong direction. They considered that if the pulse, the pain, and the temperature were showing obvious signs of improvement the assistance of the surgeon should not be invoked; while if the temperature should rise, if the frequency of the pulse should increase, if the pain should become more severe, or if evidence of an abscess should appear, then the surgeon should be asked to intervene. On the other hand, there were those who believed that while the inflammation of the appendix, being undoubtedly present, might at any moment extend to the adjoining peritoneum, and while a sloughing appendix might at any moment rupture into the peritoneal cavity and set up an acute suppurative peritonitis, it was not possible for diagnostic skill to say when these catastrophes might occur; therefore they insisted that it was above all things important that the peccant organ should be removed at the earliest possible moment.

The majority of those who held the former view were physicians, and the majority of the supporters of the second view were surgeons, but it is also true that amongst those who were in favor of a waiting policy could be found no small number of surgeons, some of whom are of the same opinion still. Though more than two decades have elapsed since this cleavage of professional opinion first appeared, the same two classes still exist, and this fact justifies us in returning to the matter. There are still with us those who advocate a waiting policy, who still hold that it is possible to say from the signs and symptoms present which case will recover from an attack without an operation and when an operation is really demanded.

Now it is a fact that no small proportion of the cases of appendicitis do recover from a first attack of the disease without any operation, and many of these may never have a subsequent attack. It is also true that in many serious cases it is possible from the pulse and temperature to say that the attack is severe and that it is rapidly growing worse. On the other hand, those who advocate immediate operation may admit that while many mild cases of appendicitis will recover without any operative procedure, and also that many severe cases manifest their severity in time for operative treatment, yet they hold, and hold strongly, that there are not a few urgent cases in which the signs and symptoms of the disease give no hint of severity. Even the general condition may improve with rest in bed, while an intense inflammation may be present in the appendix, and any delay in operation in such circumstances may afford time for the inflamed appendix to rupture, to discharge its contents into the peritoneum and thus lead to a fatal issue. They maintain that the pulse may lessen in frequency, the temperature may fall, that the sharp pain of the commencement of the attack may disappear, yet the virulence of the inflammation may not have abated in the very least, and the danger to the patient has not altered in the slightest; that, indeed, the danger may have increased, and that the very abatement of the severity of the symptoms may sometimes be directly associated with the increase of the severity of the local condition. From these facts, or at least from these opinions, they claim that it is impossible

to deny that a patient who appears to be only slightly ill may be in danger of a rapid death unless the appendix is removed with the least possible delay.

It cannot be denied by any one who has paid attention to the trend of opinion in this matter that the number of the adherents to the plan of immediate operation is steadily increasing. Many surgeons who have started with the idea that it is not unsafe to delay operation while the patient is kept under observation have been compelled to change their views by the occurrence of cases in which without warning a general peritonitis has appeared.

One of the most earnest advocates in this country for the immediate operation is Mr. Edmund Owen, and in his valuable work he has expressed views with the eloquence and energy which are so characteristic of both his spoken and his written word. In the spring of 1913 there was a discussion on the subject of appendicitis at the Medical Society of London, which was opened by Mr. Owen, and no one who was present on that occasion will forget the impressive terms in which he set forth his views. In this book we find the arguments then employed stated more fully, and combined with them a general account of the disease, its symptoms, and the method of operation for the removal of the appendix. The teaching of the work may be summed up in the sentence that a patient with an inflamed appendix will not be free from danger till that appendix is removed, and that the sooner it is removed the better.

Deaver's work on appendicitis, though built on different lines, appears to have been written with the idea of delivering to the medical profession the same message—namely, the immense importance of an immediate operation in every case of appendicitis. We are told emphatically that "there is no logical escape from the principle of immediate operation in acute appendicitis." Though the etiology and symptoms of the disease are described they are subordinated to the question of the operative treatment. The author shows that medical literature of the past contains a large number of references to abscesses and inflammations in the neighborhood of the cecum, and in some of these the appendix itself is mentioned as the apparent starting-point of the disease, an indication that we are not face to face with entirely new pathological conditions as some observers, irritated with our ignorance as to etiology, have sweepingly declared. In the chapter on the symptomatology Deaver makes a point which is to some extent confirmed in an interesting account by Mr. Battle of some operations for appendicitis which the *Lancet* of May 16, 1914, published. There is, says Deaver, no constant relationship between the symptomatology and the pathological alterations. This is indeed the most important fact to bear in mind with regard to the symptoms of the disease.—*Lancet,* May 16, 1914.

COMMON ERRORS IN THE TREATMENT OF DIETETIC DISORDERS IN INFANTS.

PRITCHARD, writing in the *Lancet* of May 16, 1914, contributes a paper full of clinical points. As to diarrhea he says this is often wrongly attributed to some indigestible quality of the food, when the true explanation is hypersensitiveness of the neuromuscular mechanism concerned in the locomotion of food through the intestinal canal, a condition commonly known as lienteric diarrhea. Pritchard sees many cases of this kind in which change after change in the character and quantity of the food leaves the infant in exactly the same condition. In such cases a vicious and intractable reflex has been acquired which can only be cured by patient attempts at reëducation.

Pritchard sees many cases of diarrhea with so-called undigested curds in the motions which are regarded as due to indigestion, but which are in fact due to starvation. Frequent dejections of this kind are often associated with debility which is due to inanition, for in starvation the mucous membrane of the bowel manifests, as it were, a paralytic secretion with frequent

alvine discharges which to the inexperienced at once suggest some irritation due to food causes. The presence of so-called undigested curds in the motions is usually the misleading evidence on which the diagnosis is based. He has repeatedly demonstrated, by means of the "test-feed," that infants passing stools of this character are the victims of inanition, and that so far from obtaining food which disagrees, they obtain, as a matter of fact, no milk at all, or only a very small quantity, from the mother's breast. Even the fact that these so-called undigested curds of casein continue to appear in the motions when all milk is withdrawn from the diet, and when the infant only subsists on whey, egg-water, or even water, does not appear to suggest to the skeptically minded that they have no more connection with coagulated casein than they have with hard-boiled white of egg or any other substance with which they have a superficial resemblance. To prove their origin these so-called curds have been submitted to chemical analysis, and even to biochemical tests. They are known to contain considerable quantities of fatty acids, mostly in combination with calcium, forming in fact insoluble soaps. Further, they contain a small proportion of albumin, and a remainder which is of uncertain chemical composition but containing nitrogen in relatively the same proportion as occurs in casein. On this evidence, and on the evidence of the superficial appearance to small curds of coagulated casein, these white bodies have been regarded as the undigested remains of milk. But if a stool consisting mainly of these so-called curds is carefully washed out in a bowl of water and the little white balls are teased out and disentangled, they will be found to consist of rolled-up plaques of mucus, which when floated out in the water cannot possibly be mistaken for milk curds or anything else except mucus. The fact that soaps, fatty acids, albumin, bacteria, and calcium salts can be detected in these little white balls by chemical analysis in no way weakens the argument that they are the pathological products of the activity of the mucous membrane, and not the undigested remains of milk, for on similar evidence the mucous discharges from the nose or respiratory tract might be considered of milk origin, as their chemical analysis is the same.

Pritchard does not mean to imply by the somewhat dogmatic statements above expressed that milk residues do not at times appear in the stools and especially in cases of lienteric diarrhea. What he means is that these small white particles, generally about the size of a pea, which look like pieces of coagulated milk, and which are found in the stools of infants suffering from colicky pains, are really pieces of stringy mucus which have become partially inspissated and coiled up into tight balls by the peristaltic movements of the bowel. By teasing out and unraveling these little balls it is open to all to convince themselves of the truth of his contention. Further, such conditions, when treated on the ground that they are undigested milk, do not improve.

Diarrhea, or at least the too frequent passage of dejections, is often attributed to some fault in the character of the food, when the true etiological explanation is that the hypersensitive neuromuscular mechanisms of the bowels are stimulated into activity by some preceding event—as, for instance, by forcible sucking at a relatively dry breast or at some artificial nipple which is pierced with too small a hole. It must be remembered that although the locomotion of food through the alimentary tract is generally regarded as consisting of a number of independent phases, such as deglutition, intestinal peristalsis, or defecation, nevertheless each independent neuromuscular mechanism, whether it be of esophagus, stomach, or intestine, is closely associated and bound up in a definite and correlated series, action or cessation of action in the one being the liberating stimulus for activity in the next. Thus violent sucking often initiates painful peristalsis or even lienteric diarrhea, but such diarrhea is not satisfactorily dealt with by changes in the character of the food.

Concerning constipation, Pritchard says

it is a symptom which is often, in an etiological sense, wrongly interpreted and wrongly treated. It may be said that there are three common causes of constipation in infants, although the number of occasional causes is almost infinite. The common causes are: (1) Dulling or disorganization of the rectal reflex by previous overstimulation and exhaustion of the nerve centers (purgative medicines, enemata, suppositories, and previously existing diarrheas); (2) overfeeding, especially with fat; and (3) underfeeding (chiefly in the case of breast-fed infants). Inasmuch as these causes are in their etiology as widely separated as the poles, it is clearly most irrational to expect that constipation can be treated by any one uniform method—as, for instance, by the administration of castor oil, gray powders, or by increasing the percentage of the fat in the food.

Before we attempt to treat constipation we must discover the cause. Pritchard has certain stock questions with which he plies the mother in order to elucidate the actual cause of the constipation. They are as follows: (1) Are the motions hard or soft? (2) Are they large or small? (3) What remedies have you tried? (4) What food and how much have you been giving the baby? By means of these questions he can generally discover whether the rectal reflex has been tampered with by injudicious methods of stimulation, also whether the infant has been obtaining too much or too little food. If the variety of constipation does not fall under any of these headings he searches for other causes.

As regards treatment, the cure of cases of constipation due to dislocation of the normal rectal reflex can only be effected by reëducation—often a difficult matter and best promoted by massage and the teaching of a new reflex. This should be applied with absolute regularity every day.

Constipation due to excess of fat must be treated by a reduction in the percentage of cream in the case of artificially fed infants, and by controlling the quantity of milk consumed in the case of breast-fed infants, or possibly by dieting the mother. Formerly Pritchard used to treat a number of infants suffering from this variety of constipation by the routine administration of olive oil. Olive oil is of course invaluable in cases in which the infant is suffering from fat starvation, but it only aggravates the condition in the class of case Pritchard is now referring to. It was in consequence of the realization of this mistake that he came to use petroleum as a lubricant in place of olive oil, and since this discovery, now some eight years ago, he has practically used no other form of aperient.

Cases of constipation due to starvation very seldom come under his notice in artificially fed infants, but they are very common among breast-fed infants of the lower classes. He could give details of dozens of cases which have been brought to his clinics, and which have previously been treated ineffectually with aperients and purgatives, but which have immediately improved when the want of food had been corrected.

Finally, Pritchard says a few words about that common symptom of disturbed motor-function which is so often wrongly ascribed to food causes—namely, colic or wind. So-called colic or wind in infants is nearly always due to some spasm of sphincter or group of intestinal muscles which interfere with the normal locomotion of food through the alimentary system. Wind may indeed be actually retained in the stomach by spasm of the cardiac sphincter, but much more often the pain which is supposed to be due to wind is attributable to the arrest in spasm of the normal waves of contraction which pursue one another throughout the whole length of the intestine. The application of the bismuth meal and the *x*-ray screen has revealed some very interesting examples of enterospasm in infants which have produced troublesome symptoms the nature of which was not altogether clear. One of these cases was as follows:

An infant at the Nursery Training

School in Hackney had repeated attacks of screaming with serious and violent vomiting. The child was doing badly and losing weight. One day Pritchard happened to be at the school when one of these attacks was in progress, and chancing to place his hand on the abdomen he felt some very forcible waves of contraction passing across the upper part of the abdomen. As some of the symptoms were not altogether inconsistent with pyloric spasm, he admitted the infant into the Queen's Hospital and thoroughly investigated the case by means of bismuth feeds and *x*-ray examination. When given a feed of thin Benger's food thickened with 2 ounces of carbonate of bismuth the infant seemed in less pain and almost ceased vomiting. The interesting fact, however, was that the food, instead of experiencing a check at the pyloric valve, passed through this aperture unusually quickly, and continued to travel down the small intestine and through the ileocecal valve in a perfectly normal manner and at a perfectly normal rate, but when after some six hours it reached the splenic flexure, here it happened to encounter an unexpected check and the bowel wall lapsed into a condition of somewhat prolonged spasm. From this time forward the locomotion of the bowel contents was irregular, jerky, and spasmodic. Owing to this discovery, and taking advantage of the benefit which the large doses seemed to confer on the child, he continued to give very large doses of bismuth combined with petroleum before each meal. The improvement in the infant was immediate; it at once began to put on weight, and within fourteen days was returned to the school in a greatly improved condition, from which it has not up to date relapsed. Bismuth combined with petroleum seems to exercise almost a charm on disordered peristaltic movements. This case appears to be instructive because it illustrates his point that symptoms which are really due to disturbances of the motor function of the bowel can easily be mistaken for symptoms due to inappropriate food, and as such be ineffectively treated. This particular case had been treated for weeks by modifications in the diet and by drugs directed to soothe the irritability of the stomach.

OCULAR COMPRESSION IN DIAGNOSIS AND THERAPEUTICS.

The *New York Medical Journal* of May 16, 1914, says that although compression of the eyeballs has been, of late, the subject of numerous articles, all have referred to the phenomenon as one of mainly physiological interest. More recently, however, the slowing of the pulse and diminution of the intensity of the heart-beats, which in some instances reached complete arrest and general collapse, the production of respiratory disorders, such as cessation of the thoracic excursions and inspiration or spasmodic expiration, suppression of reflexes, and also disturbances such as albuminuria, glycosuria and polyuria, nausea, a tendency to fall forward, failure of the knees, and fainting, have claimed the attention of clinicians. In the light of present knowledge, several bulbar centers must be implicated in the process, the peripheral excitation being received, doubtless, through the sensory terminals of the fifth pair. It has been hoped, therefore, that compression of the eyeballs might prove of diagnostic and therapeutic value.

As to diagnosis, tentative tests have shown that in exophthalmic goitre the "oculocardiac reflex," as the phenomenon has been rather prematurely termed, was markedly exaggerated in most cases, since marked slowing of the heart-beat could be obtained, as noted by Sainton and also by Lesieur, Vernet, and Petzetakis (*Lyon Médical,* April 5, 1914). In senile and alcoholic tremors practically no reaction was obtained; the reflex was also abolished in fourteen cases of Parkinson's disease. In general paralysis the results varied with the stage reached, very marked response having occurred in four out of six cases examined. This also proved true in multiple sclerosis.

As to therapeutics, the readiness with which morbid phenomena could be awak-

ened by compression of the eyeballs led Loeper and Weill (*Bulletins et mémoires de la Société médicale des hôpitaux*, April 9, 1914) to ascertain recently whether the procedure could not be resorted to as a remedial measure. The results obtained were such as to afford encouragement. In subjects who suffered from vertigo, tinnitus, pharyngeal and pharyngolaryngeal spasm, these morbid phenomena could be arrested for a time. Respiratory neuroses of an asthmatic type could be sometimes made to cease for a prolonged period. The most striking results, however, were obtained in a condition which occasionally causes considerable anxiety—more or less incoercible hiccough. In this condition bilateral compression of the eyeballs brings about instantaneous arrest of the symptom. Persistent yawning, as humiliating at times as it is uncontrollable, may also be mastered by the simple measure of compressing one's eyeballs. This applies also to spasmodic sneezing, an expression of central hyperesthesia doubtless, since, as in a case witnessed by the writer, it may be brought on by trifling emotions, excitement, etc., irrespective of any physical irritation of the nasal mucosa. Though tried only in comparatively benign disorders, compression might ultimately be found useful for the control of some of the more severe forms of spasm, those of tetany, tetanus, puerperal eclampsia, etc., which so often thwart all remedial efforts. The so-called "oculocardiac reflex" is at least worthy of additional investigation.

THE CAUSES AND TREATMENT OF HIGH BLOOD-PRESSURE.

HALL in the *Clinical Journal* of May 20, 1914, asserts that prominent among the measures capable of reducing excessive pressure is rest. For patients with a pressure of 200 mm. and upwards, who have been overworked mentally and physically, the best plan is to commence the treatment by a period of absolute rest. If there be a pulse of over 100 per minute, or signs of heart failure, rest is imperative, and the recumbent position should be maintained until the pulse-frequency has come down to normal, and the signs of cardiac weakness have disappeared. But many of the cases of high pressure occur in people who take too little exercise, and Hall believes that the advent of the motor car will be accompanied by an increased amount of arteriosclerosis and high pressure. This will be due to two causes: one is the disinclination of motorists to take any walking exercise, and the second is that the rapid movement through the air causes an appetite, which is not justified by the exercise taken. It will be, therefore, our duty to carefully consider the amount and kind of exercise that should be taken daily. For the well-to-do and robust there is no better exercise than horse-riding, but all who have the use of their legs can indulge in walking, which is one of the best forms of exercise. Cycling may be allowed if taken quietly. Then golf is a game which seems to have an ever-increasing fascination, both for men and women. Fortunately, if played in moderation, it may be allowed to nearly all patients, except those with advanced arteriosclerosis. Of the more specialized methods of exercise, such as are included in the methods of Schott and Oertel, Hall does not do more than say that they should be carried out under the direction of physicians who have had special experience in this line of practice. Massage he has found extremely useful in the case of patients who are unable to take sufficient exercise, but directions should be given that deep abdominal massage is not desirable, the massage being almost entirely confined to the chest and extremities. Vibratory massage is said to yield even better results than the ordinary manual method.

The care of the skin is most important, and remedies to promote its action are indicated; warm baths, followed by vigorous friction of the skin, are very beneficial. If the patient has been accustomed to Turkish baths, he may certainly continue their use with advantage, but Hall asserts he should have great hesitation in allowing a patient

with high pressure to take his first Turkish bath.

In cases of insomnia the wet pack at 70° F. will often have a very soothing effect. It answered better than anything else in a patient who had a pressure of 250 mm.

The electric light bath will be found extremely useful in many cases of high pressure. It stimulates the cutaneous vessels and causes sweating, and patients usually experience a sense of well-being after the employment of the bath. The D'Arsonval current of high frequency may also be tried. It reduces blood-pressure, and promotes the nutrition of the patient. In cases of high pressure with obesity the Bergonié system may be warmly recommended. Hall has seen much good from its use.

With baths we might very well consider the line of treatment which may conveniently be termed Nauheim. Hall has seen the greatest possible benefit from its employment in suitable cases, but, like other potent measures, it is a two-edged sword, and he is equally certain that lives have been prematurely terminated by the use of this method. The Nauheim treatment is contraindicated in cases of advanced arteriosclerosis, chronic nephritis, and intrathoracic aneurism. It should only be carried out under the observation of a physician who has had special experience in this method of treatment.

Holding the view that he does, viz., that high pressure and arteriosclerosis are largely due to autointoxication, the question of dietary is one of the utmost importance. But here again no general rule can be laid down. A period of wholesome starvation will benefit some of our patients, while on the other hand we shall find it difficult in some cases to induce our patients to take sufficient nourishment. Speaking generally, it may be stated that the most suitable diet for arteriosclerotics with high pressure should be mainly composed of vegetables, farinaceous articles, and milk, while substances rich in nitrogen, and especially butcher's meat, should be avoided. In some dyspeptic patients Hall has advised half a pint of soured milk to be taken three times daily, greatly to their benefit. As he is of the opinion that salt is harmful in cases of arteriosclerosis, he limits the amount of salt taken as much as possible, and prohibits salted meat and fish.

But not only the quality but also the quantity of food taken must be regulated, and an attempt should be made to limit the amount to what is sufficient to keep the patient in good condition. The treatment of the obese who suffer from high pressure is attended with some difficulty, as the diet which is suitable for one condition is injurious to the other. Something may be done by excluding sugar, sweets, pastry and potatoes. Saccharin or saxin may be substituted for sugar, and kalari, apax, akoll, and spartan biscuits, together with plasmon and gluten bread, may be eaten instead of ordinary food.

Turning attention to the character and number of meals taken in the day, Hall is in favor of distributing the amount over four meals of about equal value—*i.e.*, breakfast, luncheon, tea, and dinner. The two best meals in the day should be breakfast and luncheon; tea should consist of some bread and butter or plain biscuits with weak tea, or, still better, cocoa, or milk and water; and dinner should be a light meal—a little fish and vegetable with a milk pudding. Some patients sleep better if they have a little hot milk, or Benger's or Allenbury's food, before retiring to rest.

Tea and coffee should be taken with great moderation, and some patients are better without any; black coffee should be tabooed. Alcohol is always prejudicial to the class of patients we are considering, but a few cannot or will not do without some stimulant, and in these cases he allows a little dry sherry or a still Moselle or hock. An abundant supply of pure water, preferably distilled, is useful, but it must be remembered that excessive fluid is sometimes a factor in the production of high pressure, and in cases of failing heart it may be necessary to limit the amount of liquid taken.

Tobacco should be indulged in with the

greatest moderation, and if there be anginal symptoms it should not be allowed.

The condition of the gums and teeth needs careful attention in view of pyorrhœa alveolaris being one of the causes of high tension.

Hall states the longer he watches cases of arteriosclerosis the less value does he place upon drugs in the treatment of this condition.

A serviceable group of drugs is that which has an aperient effect; amongst these he would give the first place to calomel and blue pill. These preparations are not only useful as aperients, but they also have a very remarkable effect in lowering blood-pressure. Sir Lauder Brunton has emphasized the value of Plummer's pill; this is a very convenient way of giving calomel in small doses, and he has had much use of it in the past. A teaspoonful of Epsom or Glauber's salts may be taken in half a tumblerful of warm water before breakfast, or one of the mineral waters, such as Carlsbad, Friedrichshall, or Hunyadi Janos, may be substituted. Recently, Hall has found a tablespoonful of pure paraffin taken at night acting pleasantly and efficiently.

Next to the aperients he would place the iodides. He usually employs the potassium salt, but some patients tolerate the sodium salt better. If neither of these salts seems to suit the patient iodoglidine may be tried. He does not believe in large doses, but orders small doses—say 3 grains to be taken three times daily for months, or even years.

In patients with a syphilitic history the Wassermann reaction should be tried, and, if positive, mercury should be administered, preferably by inunction. Hall would not advise salvarsan in these circumstances. After a mercurial course potassium iodide may be given in full doses.

As he has already mentioned, high blood-pressure is often met with at the menopause, and is frequently accompanied by obesity; in such cases small doses of thyroid extract, together with a combination of bromide and iodide of potassium, will be found most useful in diminishing weight, lowering tension, and relieving the patient of the flushes and feeling of fulness of the head.

If the iodides are badly borne, potassium or sodium nitrite, in 1- to 2-grain doses, may be tried, but doses up to 5 grains have been warmly advocated. In solution they are unstable, so they are best ordered in chocolate tablets. In a few cases Hall has found much benefit from the administration of the hippurates of ammonia and lithia. The latter is the one he usually employs; 3 or 4 grains may be given daily. It is dispensed in 1- and 2-grain tablets. The ammonia salt is less powerful; 6 to 7 grains may be given daily. Guipsine and antisclerosin (Trunecek's artificial or inorganic serum) he has not employed, and is therefore unable to give any first-hand information about them. In rheumatic subjects the salicylate of soda will naturally be ordered.

The more powerful and more quickly-acting vasodilators, such as amyl nitrite, nitroglycerin, and erythrol tetranitrate, may conveniently be considered together. He reserves them rather for emergencies than for regular use, and chiefly orders them for anginal or dyspneal attacks coming on in patients with high blood-pressure. For the very acute attacks the inhalation of 3 minims of nitrite of amyl on a pocket-handkerchief will often give immediate relief, and its action may be continued by giving 1/100 grain of nitroglycerin. This dose may be increased up to 1/10 grain—*i.e.*, ten times the initial dose. A patient of Hall's took 10 minims of the official 1-per-cent solution three times a day for some weeks. Eventually it failed to give relief, and the last week or so of the patient's life was rendered endurable only by the hypodermic use of morphine. He has found erythrol tetranitrate in doses of ¼ grain most useful in patients who get anginal symptoms on starting to walk. The drug should be given a quarter of an hour previously.

Bloodletting is a remedy which he has found of the greatest possible service in

certain cases of high blood-pressure. Venesection is indicated where the patient is unconscious and cerebral hemorrhage is feared; also in convulsive cases attended with high tension. In these cases the timely abstraction of from 10 to 20 ounces of blood, according to the severity of the attack and the sex of the patient, will often be attended with a most satisfactory result. Hall remembers, in one case, a woman aged sixty-four years, who was cyanosed, unconscious, and twitching violently, that as the blood flowed the patient regained her normal color, the twitchings ceased, and she gradually became conscious.

Nature itself seems to indicate the appropriate remedy in many cases by the onset of copious epistaxis. Hall has seen quite a number of cases in which profuse nosebleeding has been the first indication to attract the attention of the patient to his serious condition.

Hall would like to emphasize the value of the sphygmomanometer in cases of coma, as an indication for the employment of venesection, as by this means we may be able to distinguish between coma due to hemorrhage and that caused by thrombosis, as in the latter condition blood-pressure is invariably low.

PITUITRIN IN POSTOPERATIVE INTESTINAL STASIS.

PORRITT, in the *British Medical Journal* of May 23, 1914, points out that in the two following cases pituitrin was a valuable auxiliary to other measures for supporting vital power and overcoming intestinal torpor, especially as the cases were dealt with in a hillside cottage with no other nursing than that of a neighbor and the visits of an excellent district nurse.

The first case was that of a girl, aged 9, whose appendix was removed a week after the subsidence of an acute attack. Eight days after the operation the wound was reopened to ascertain the nature of a painful swelling in the right iliac fossa attended with abdominal distention and vomiting, suggestive of obstruction. A deep abscess was found and drained. The distention increased, and persistent vomiting of dark-green fluid came on. Calomel given by the mouth was rejected, and turpentine enema failed to bring away any flatus. On the night after the drainage of the abscess the patient was actively delirious, picking at the bedclothes and stripping the paper from the wall at the head of the bed; the distention was increasing, the vomiting of green liquid was incessant, and she had a shabby pulse of 130. Pituitrin 0.50 Cc. was injected subcutaneously. An hour later the pulse had fallen to 115, was fuller and steadier, and flatus began to be expelled per rectum. An asafetida enema then caused the expulsion of much flatus. After this the dangerous symptoms subsided and the patient made a good recovery.

A woman, aged forty-three, was seen on April 1, 1914, when she had the typical signs of acute appendicitis. Immediate operation was advised, but as there was no other woman in the cottage, it was impossible to do anything that day. The next day the abdomen was markedly distended, and the acute tenderness in the right iliac fossa had given place to general abdominal tenderness. On opening the abdomen the same day seropurulent fluid was found free in the abdomen, and an acutely inflamed appendix, adherent to the side of the pelvis, but with no other limiting adhesions. Near the end of the appendix was a perforation from which thick, odorless pus was trickling into the abdomen. The appendix having been removed, a stout tube was passed down to the stump, and another into Douglas's pouch. The morning after the operation there was much serous discharge on the dressings and in the tube going to the appendix stump, but from the tube in Douglas's pouch thick grumous pus was sucked. No flatus had passed, and the bowels had not acted, though 5 grains of calomel had been given five hours after the operation. Three grains of calomel immediately, to be followed by a grain every hour till the bowels moved, were ordered. Next day the distention was worse, and green liquid was vomited, though nothing was being taken

by the mouth. The bowels had not moved, and neither turpentine, asafetida, nor claret enemata brought away either feces or flatus. One Cc. of pituitrin and 1/30 grain of strychnine were given on the second morning after the operation. Within an hour some flatus was expelled per rectum. At night 1/60 grain of strychnine and 1 Cc. of pituitrin were given. In half an hour a free expulsion of flatus took place, followed soon afterward by a copious liquid motion. The after-progress of the case was uneventful and satisfactory.

TREATMENT OF PRURITUS ANI.

In the *British Medical Journal* of May 2, 1914, CROPPER calls attention to two remedies which are of real and lasting benefit. The first is our old friend tincture of iodine (B.P.), which may be used in half or full strength with impunity. It is not at all irritating to mucous membranes, and the slight pain, caused if there are open skin cracks, is quickly over. A patient who had got into a very bad state with numerous skin cracks, wash-leather appearance of the skin, and not infrequent perineal abscesses, and loss of sleep, found that, used thrice weekly, this remedy enabled him to sleep all night, and, in fact, made him quite comfortable. (It should not be used so as to excoriate the skin.) Even better than tincture of iodine is compound tincture of benzoin; mildly styptic and really antiseptic, it may be that its action is largely mechanical, and gives the necessary rest to the affected part. Whatever its nature its action is little short of marvelous, for within two minutes or so the spirit in the tincture evaporates, and then all temptation to scratch the part is over. It is cleanly, and does not soil the linen as most ointments do, since it dries up very quickly. It may be used twice or thrice daily, and never irritates. Samples vary greatly from a light color to a dark brown, and also in consistency; but, luckily, they seem to have the same effect, though perhaps the darker and thicker Friar's balsam is the most useful.

It is very necessary to use the balsam before a hot bath if the water is very hard, prolonged hot baths in hard water being very injurious in these cases.

It is unnecessary to cauterize or excise small fissures, since Cropper asserts he has positive evidence that these can be, in many if not all cases, cured by tincture of benzoin. Larger fissures are, of course, another matter.

PROGRESS OF THE TREATMENT OF VENEREAL DISEASE.

MCILROY (*British Medical Journal*, March 14, 1914) believes that all measures which have as their aim the prevention of compulsory prostitution for economic reasons should be encouraged.

That legislation should be directed toward the permanent segregation of the mentally deficient.

That the judicious education of the people by the medical profession should be undertaken with a view to promote a knowledge of the dangers of venereal diseases both to the individual and to the community.

That it should be a penal offense for any one to communicate knowingly venereal diseases to others who are unaffected or are ignorant of its consequences.

That compulsory notification of all abortions and premature births should be given to the public health authority, and that facilities could be obtained from that authority for the carrying out of diagnostic methods as to the possible cause of such conditions.

That all measures of treatment should have as their aim the encouragement of patients to present themselves for observation without the fear of any moral stigma being attached.

That all methods of treatment and notification should be in the hands of the medical profession only, and that treatment by unqualified persons should be a punishable offense.

That advice should be given to patients

to continue under observation for a prolonged period of time. Methods of precaution to be adopted for the prevention of the spread of the disease to others should be indicated, and other members of the family should be induced to present themselves for observation and treatment if required.

That treatment should be carried out in the wards and out-patient departments of the general infirmaries and hospitals, and all special institutions for the treatment of venereal diseases, such as lock hospitals, should be abolished as such.

In those cases of venereal diseases in which the patient is in an infective condition, and in which he or she is engaged in a trade or occupation the continuance of which would prove a danger to the community, powers should be given to the medical attendant to enforce further treatment or to prevent resumption of that occupation.

In no way should there be police supervision or control of persons infected with venereal disease except at the instigation of the medical profession.

Public health authorities should provide methods of diagnosis and treatment for private practitioners in the case of patients who are unable to afford the expense of such.

More specialized lectures for practitioners, students, and nurses should be given on venereal diseases, and opportunities for clinical and laboratory research.

TREATMENT OF GONORRHEAL COMPLICATIONS BY ANTIMENINGOCOCCIC-SERUM INJECTIONS.

HERESCU and STROMINGER (*Zeitschrift für Urologie,* 1914, p. 102) gave from 40 to 60 Cc. of serum in doses of 10 Cc. usually into the deeper tissues of the thigh. The intervals between the injections were two or three days. The dangers from anaphylaxis are far greater than when given at too great intervals. Erythema with high fever in a few instances also complicated the injections, but this was transitory and left no consequences.

They observed the prompt disappearance of pain in arthritic cases, and the prompt restoration to normal function. The results are particularly marked in septicemic cases. Also they observed as a by-product the improvement of gleet; in some instances, the disappearance of the disease.

PNEUMOTHORAX AND REST TREATMENT IN THE MANAGEMENT OF PULMONARY TUBERCULOSIS.

MURPHY and KREUSCHER (*Interstate Medical Journal,* March, 1914) present a clinical study of this subject which embodies the Murphy technique.

The patient is placed in a comfortable sitting position and the chest is bared over the side to be injected. The point of insertion of the needle varies somewhat in individual cases. If the apex of the lung be the site of the lesion, the needle should be inserted in the fifth or sixth interspace between the anterior and midaxillary line. The best point is the fifth interspace at or near the anterior axillary line. If it be a middle or lower lobe tuberculosis, the injection should be made over the upper lobe, preferably in the fourth interspace just outside the mammary line. Ethyl chloride may be used for local anesthesia, though the injection zone may be infiltrated with a novocaine solution.

A tenotome puncture should always be made through the skin to permit of easy insertion of the needle, and to prevent the introduction of septic fragments into the pleura. It is important after the needle is inserted and before the tube is attached to assure oneself that the point of the needle is in the pleural cavity, and this is done by instructing the patient to take a series of deep inspirations. If the needle is within the pleural cavity, a current of air may be heard to rush in. After several deep inspirations, if a little air has entered the pleural cavity, there will be a current during both phases of respiration. The

opening of the needle should be covered with cotton for the purpose of filtering the air that is admitted and thus diminishing the likelihood of infection of the pleura. Sometimes even though the point of the needle be within the pleural cavity, it is found that the current of gas meets with considerable resistance. This is undoubtedly due to the fact that the current of gas, unless some pressure be used, impinges on a small area of lung tissue, and that it is not sufficient to overcome the cohesion that exists between the two layers of the pleura, which cohesion Lempke said had been estimated at 12½ mm. Hg. To determine that the tip of the needle is in the pleural cavity, a manometer may be used after the manner of Gray, which will indicate negative pressure by a sudden rise in the near column of the instrument, provided that there is no adhesion between the leaves of the pleura at the point of puncture.

The authors always use a blunt needle, aspirating size, with an additional opening on the side of the needle near its tip. This opening permits the gas to pass into the pleural cavity should the tip of the needle be plugged by a bit of tissue. After the needle has been introduced, it is attached to the tubing leading to the cylinder which contains the nitrogen gas. The quantity of gas to be injected varies considerably and should range from 50 to 200 cubic inches, the amount to be given in each case being best regulated by the symptoms of distress, dyspnea, and the displacement of the mediastinal contents and diaphragm. When the proper amount of gas has been injected the needle is withdrawn, the wound sealed with collodion, and a small firm compress is placed over the puncture. This compress prevents the escape of gas from the pleura into the subcutaneous cellular tissue. The patient is then placed in bed in a comfortable position. If the cough or dyspnea becomes annoying, a small hypodermic of heroin may be given.

Skiagrams should be made before and after the injections to determine the progress of the disease, to watch the extent of the lung collapse, and to note the pressure on the heart and mediastinum.

As to the results, it is stated that thousands of cases could be collected from literature showing a complete symptomatic cure; many with a vast improvement in the majority of patients. From an experience of nearly 500 cases treated by Murphy and his associates with an aggregate of 2500 injections, it is concluded that the artificial pneumothorax should always be made in every case of pulmonary tuberculosis where there is no absolute contraindication. In the results obtained in the cases observed by the authors the following advantages are attributed to the pulmonary rest granted by the procedure:

The decline or disappearance of the fever, showing a diminution or inhibition of absorption from the mixed as well as the tuberculous infection.

The diminution or disappearance of the expectoration.

The disappearance, partial or complete, of the bacilli in the sputum.

The gradual increase in weight.

The lessened frequency of hemorrhage.

The great general improvement of the patient and the short time in which these changes take place.

Murphy and Kreuscher are convinced that when the profession as a whole adopts their early treatment the period of convalescence and incapacity will be reduced to a minimum, and that the accidents in administration will be negligible in number. They believe that the diagnosis in the future should be made in the pre-cough or pre-sputum stage of the disease in place of having it made in the cavernous, excessive expectoration and protracted cough stages; that pulmonary rest is the initial indication in the initial stage of pulmonary tuberculosis, and can be safest and best secured in the incipient stages.

A number of operative accidents during and after the introduction of nitrogen gas have been reported in the literature.

Sundberg reports three deaths: First, a woman of twenty-eight was about to re-

ceive the eighth injection of air. As a trocar was being inserted into the intercostal space she was seized with syncope and died with hemiplegic symptoms thirty-six hours later, without regaining consciousness. Necropsy showed numerous foci of softening in the cerebral cortex and thrombosis of the small vessels. Sundberg believes that these were due to vascular crises in the cerebrum, originating in the pleural reflex.

Second, a man of forty-nine had just received 300 Cc. of gas when he became sick with intense and progressive dyspnea. To calm him, 15 mgrm. morphine was given hypodermically, but death ensued in twenty-five minutes. Necropsy showed that the vocal cords were not in the cadaveric position, but tightly opposed by their inner margins. The author thinks this patient succumbed to a spasm of the glottis.

Third, a man of twenty-one died after the nitrogen was injected for the sixth time. Necropsy showed no cause for his sudden death, and Sundberg believes that while the pleural reflex may have been responsible for the first two fatalities, the cause of the last is problematic.

Balboni says: "Massive injections or rapid introductions of gas will cause dyspnea and collapse due to displacement of the mediastinum from pressure on the other lung and heart. Pressure symptoms need only be slight at the time of introduction to become marked in a few hours." The writers have had no such experience.

The rapid evacuation of the contents of the tuberculous cavities may cause the spreading of infection into the other lung (Forlanini, Schmidt, Brauer).

In the course of treatment a pleural effusion may make its appearance, usually after the pneumothorax is well established. Dumarest thinks it is due to a secondary infection following trauma to the lung. Schmidt assigns every pleural infection to the technique, and adds that he has never observed a pleural effusion in any of his cases. Persh calls attention to the fact that the infection may be carried in by the needle from a minute particle of cuticle, as it may be impossible thoroughly to sterilize the operative field. Forlanini lays stress on the microbic origin—*i.e.*, pathogenic germs passing from lung to pleura. Gretz thinks the slowing of the lymphatic circulation is an important factor. Braun, in 40 cases treated, has not had a pleural effusion. He attributes this to the great care taken in thoroughly sterilizing the instruments, nitrogen, and operative field.

During 1907-8, Forlanini made 1454 injections of nitrogen into the pleura. In four only were there any accidents, and in but one of these did death follow. This was a case of miliary pulmonary tuberculosis with a pericardial effusion of about 200 Cc. Since then he has made thousands of injections with no further ill effects.

Jensen reports an experience which confirms Brauer's statement that embolism may occur from air getting into a pulmonary vein without coming directly from the exterior. It is immaterial whether the embolism is caused by oxygen, nitrogen, or air, and it is probable that certain cases published as pleural "epilepsy" were in fact cases of embolism.

Bard presents evidence to prove that pleural pulmonary fistulæ are of much more frequent occurrence in the thorax than has generally been recognized. They do not believe that to be a contraindication to the treatment as long as the patient recovers from the tuberculosis.

From his experience Murphy believes that the fatal results are due to failures in the technique and to an absence of the knowledge of the accidents that can occur in the surgery of the lungs, independently of the pneumothorax treatment. He suggests that the men who expect to follow this line of work should do experiments on animals. This experimental work in the chest and with the lung will give a knowledge which will be of inestimable value in the therapeutic work.

Death from dyspnea should not occur. If the attending surgeon is on the alert, all he needs to do to avoid a fatality in these

cases is to introduce a trocar or a large aspirating needle into the pleura on the side on which the pneumothorax exists and permit the air to escape, and thus reduce the plus pressure which is displacing the mediastinum. If he has neither trocar nor exploratory needle, he can freeze the skin with a little salt and ice, cut it, then with a hemostat spread the tissues, rupture the pleura, open it, and permit the air to escape and thus save the patient. The authors had but a single instance of rupture of the lung or bronchus into the pleura in their total number of cases. The reason for the absence of this accident is due to the fact that their apparatus has scarcely a plus pressure as it carries only ¾ ounce to a square inch. Pressure to force the air in is absolutely unjustifiable. If the lung is organically adherent, it should not and cannot be efficiently torn away, and therefore great plus pressure would have no advantage, and if the pleura is not organically adherent it needs just a plus pressure for the admission of the air.

ASCENDING INFECTION OF THE KIDNEY.

SWEET and STEWART (*Surgery, Gynecology and Obstetrics,* April, 1914) conclude an experimental study of this subject as follows:

An extensive network of lymph-vessels and channels exists in the mucosa and submucosa, in the external coats of the bladder and the ureters, and in the entire structure of the kidney. This network in the ureter anastomoses freely with the lymphatics of the bladder at the one end, and with the lymph apparatus of the kidney at the other end.

An ascending infection travels through this lymphatic system, not through the blood-vessels of the ureter nor through the lumen of the ureter. (*a*) The blood-vessels can be excluded, because the veins of the bladder and the veins of the ureter, for the greater part, open into the general venous system, not into the venous system of the kidney. (*b*) The lumen of the ureter can be excluded, because if the lumen be open to infection, the infectious process is traceable in the lymphatic system, not along the mucosa of the ureter. If the lumen be closed to infection, the process extends to the kidney in the usual way; if the lumen be open to infection, but the lymphatics not in contact with virulent infection, as when the ureter is passed through the pancreatic duct, there is no ascending infection; if the lumen be open, but the continuity of the lymphatics be interrupted, infection does not ascend; and finally, if the kidney pelvis be directly connected with the gut, the general infection, characteristic of an ascending infection of the kidney, does not occur.

From the point of view of the practical surgeon, it would seem that these results would be of service in the consideration of the possibilities of any infectious process involving the lower genito-urinary tract or the pelvic organs in general; certainly the cystoscopist must transfer his attention from the general question of cystitis to the particular one of the local lesions caused by the cystitis, their extent and location. The possibility of the effective local treatment of ulcerated processes of the bladder is also suggestive.

The results of this work upon the general question of the anastomosis of the ureters with the bowel would not seem to hold out much promise. In the authors' hands, at least, every attempt thus far has been blocked by the ease and rapidity with which the infection enters the lymphatic system of the ureter.

RESECTION OF THE RECTUM FOR CANCER WITH PRESERVATION OF THE SPHINCTER.

CHARLES MAYO (*Surgery, Gynecology and Obstetrics,* April, 1914) holds that cancers of the rectum in which not more than eight inches of bowel must be removed, the distal section being not nearer than two and one-half inches from the anal sphincter, are usually best removed through the Kraske sacral incision, with resection

of the coccyx and part of the lower sacrum. In such operations the following procedures may be instituted: (1) A freely mobilized bowel projecting through the anus may, at times, be sutured outside; (2) a large tube may be sutured within the bowel with the terminus just within the anus; (3) a sacral anus may be made and the anal segment sacrificed; (4) a permanent colostomy may be made and the whole rectum removed at the same time or at a later period. A permanent colostomy, however, is quite abhorrent to all patients, and if it is possible they much prefer to have the intestinal delivery near its normal location even if uncontrolled, and at some additional risk from recurrence of the disease. The efforts to restore function in cancer of the rectum and to obtain good cosmetic results in external cancer have added much to the high percentage of recurrence. Permanent colostomy with total extirpation of the rectum gives a higher percentage of cures than methods which restore function.

In patients suffering from cancer of the rectum in the region described Mayo advises a colostomy, and through the incision made for this purpose the hand should be inserted and a general examination made of the abdomen, as well as the pelvis. If metastasis has occurred precluding cure, or if impending obstruction demands it, a permanent colostomy is made. If there are no contraindications because of metastases, a temporary colostomy is made with a sufficient spur to deflect all the fecal flow through it.

The upper sigmoid should be elevated so that the lower sigmoid need not be shortened so as to prevent the loosening of enough of it to bring together the anterior and posterior sections after the removal of the cancer-bearing area. A clear understanding should be made with these patients that, if the extent of the disease found at exploration precludes the possibility of resection with good union, and yet if total extirpation of the rectum should not come within the limits of advisability as to cure, a permanent colostomy is to be made with the preservation of all the colon possible. For this he employs a Gersuny twist through the rectus opening of the delivered portion, or the Littlewood type of colostomy through the lateral heavy oblique muscles. Both give exceedingly good control. In either case, at the end of twelve to fourteen days a total extirpation of the rectum is made through the Kraske route.

In the separation of the carcinomatous bowel from the surrounding tissues, great care is exercised to prevent opening it and contaminating the wound. After the pelvic peritoneum is opened the upper rectum and lower sigmoid can easily be drawn down to a great extent, and when sufficiently loosened the peritoneal opening is closed by reattaching its parietal layer to the sigmoid at a higher level with catgut sutures.

Upon completion of the division of the intestine, cutting between two pairs of forceps applied above and below the growth, the slightly exposed surface of the bowel is cauterized by the hot iron to sterilize it and effectually scar the surface against grafting thereon any loose cancer cells that may be within the intestine.

While two and one-half inches of the terminal rectum is usually the limit of preservation with function of the sphincter, four inches is much more convenient in resuturing the intestine. The lower segment is usually nearly twice the diameter of the upper or sigmoidal portion. About three-quarters of the circumference is surrounded by peritoneum. This small upper end of the bowel is now split on the surface anterior to its mesentery, the incision extending up the bowel for one and one-quarter inches, thereby adding two and one-half inches to its circumference. Upon cutting the sharp points from the divided edges the circumference becomes as great at this point as at the distal fragment. Since it is desirable to have the diameter of each end alike for a continuous suture, it may be advisable to make two shorter incisions on either side of the bowel. This extra size is demanded because the suture reduces the lumen by nearly one-half.

While there is no peritoneum covering the lower segment of bowel at the point of suture, it is well known that a peritoneal surface is required only on one side for rapid healing.

To avoid fistula in the suture-line, which would usually occur at the free peritoneal or mesenteric side of the upper segment, the bowel is rotated one-half to bring the peritoneal surface posteriorly. This protects the mesenteric border. For the through-and-through suture inverting the mucosa chromic catgut is used, and this is supported by sutures of fine silk which form a second row. At this stage two or three ounces of melted vaselin are poured over and into the cavity of the wound, especially the upper portion, where the parietal peritoneum has been closed. A few sutures bring the structure together loosely over the area of sutured bowel. A rubber tissue drain is inserted on either side of the intestine and brought out of the sacral incision. If the anus is not relaxed it is divulsed. If it shows any contraction upon examination it is well to divide the sphincter muscle anteriorly. This soon heals, but permits thorough drainage temporarily from within the intestine. The rather large cavity which is apparent during the progress of the work is quickly filled by intra-abdominal pressure as soon as the position of the patient is changed from the operative one of abdominal recumbency—legs flexed at hips over the table. Without fecal discharge there is very little danger of fistula; but should one occur, it is usually so tortuous that it closes itself. Colostomy incision can be closed, as a rule, two weeks after resection of bowel.

For the treatment of cancer higher up there are several methods of extirpation with or without union, all depending on the extent and condition in the individual case. When situated lower the sphincter must, of course, be sacrificed.

The method permits thorough abdominal exploration.

A primary or permanent colostomy should be made in most cases of this type.

Increasing the lumen of the anterior and, if necessary, of the posterior portion of the bowel to double their diameter.

Rotation of the anterior peritoneal-covered bowel to secure the rapid healing posteriorly.

Stretching or division of the sphincter to secure drainage of the bowel.

Closure of colostomy to secure function.

If colostomy is permanent, remove rectum at second operation.

STREPTOCOCCIC THROAT DISEASE.

BALL (*New York State Journal of Medicine*, March, 1914) describes an epidemic in the city of Cortland, N. Y., occurring from April 23 to May 7, 1913, 554 persons having been infected. It was found that fully 90 per cent of the people infected were obtaining milk from the same milkman. Among the cows from which this milk was obtained were found two ill with garget. Streptococci were found in cultures taken from the mucous membrane of patients suffering from this disease identical with those found in the two cows' milk.

The streptococcic disease incident to milk is described as an acute specific infectious disease, probably contagious, characterized by sudden onset, more or less febrile action, and general aching with enlargement of a single deep cervical gland next to the tonsil, accompanied or followed by more or less redness of the mucous membrane covering the tonsil and its pillars; also the soft palate and uvula in some cases, with or without exudate. The incubation period is from two to three days.

A streptococcus of human or bovine origin, found in milk of cows having garget or mastitis, is the cause.

The disease consists essentially of a septic inflammation of a deep cervical gland with congestion and infiltration of the mucous membrane, especially of the soft palate, and occasionally of the larynx.

The onset is sudden, with chills, nausea, vomiting, malaise, headache, backache, pains in the limbs, lancinating pains in a deep cervical gland, a rise of temperature,

101° to 104° F.; tongue heavily furred. The patient complains of pain in the neck with little or no soreness of the throat at the onset, followed, in some cases, by increasing redness of the tonsil and its pillars, soft palate, and uvula, which may become markedly edematous. In some cases there is a grayish or white exudate on soft palate or uvula. In mild cases there may be one or two elevated pinhead pustules or festers on the arch of the soft palate or uvula. Occasionally the inflammation extends to the larynx, giving rise to partial aphonia.

While this disease simulates mumps, quinsy, tonsillitis, and diphtheria, it may be distinguished from each by the absence of one or more pathognomonic symptoms. It lacks the stiffness and rigidity of the jaws present in both mumps and quinsy; also the difficulty in swallowing, unless accompanied by edema of the mucous membrane. The swelling at the angle of the jaw is lower than the swelling in mumps, and does not affect the parotid or submaxillary gland. It may be distinguished from follicular or lacunar tonsillitis by the absence of the furred appearance or creamy discharge from the crypts, although a good many present a furred appearance of a single crypt.

It is distinguished from diphtheria by the absence of the Klebs-Loeffler bacillus and by the fact that the patches are small and do not have a tendency toward extension.

Vincent's angina, due to the bacillus fusiformis, has a more extensive pseudomembranous inflammation and ulceration of the mucous membrane of the throat.

Ludovic's angina is a cellulitis of the neck, following trauma, or secondary specific fevers.

Extension may be to the other side of the neck, causing edema of the throat; to the serous membranes, giving rise to anthritis, pericarditis, pleuritis, and peritonitis; to the skin, causing erysipelatous inflammation of the face.

The prognosis is favorable in uncomplicated cases. Of 609 tabulated cases there have been 13 deaths, due to peritonitis, pneumonia, erysipelas, and acute edema of the larynx. All deaths occurred in persons over sixty years of age.

The various symptoms should be met with suitable remedies as they arise. Locally, iodine should be applied to the mucous membrane, and iodine and petrogen to the skin. For the fever, aconite, belladonna, phosphate of iron, and iodide of mercury may be used with advantage. Phenacetine relieves the general aching and local pains. Urotropin, 5 grains, should be given every six to eight hours until bladder irritation is produced. In severe cases antistreptococcus serum, 20 to 40 cubic centimeters, should be given every twelve hours until reaction sets in and the temperature declines to normal. The patient should be kept in bed and given a nutritious diet.

As this disease is caused by streptococci in milk, it may be prevented by the use of pasteurized milk.

PERITONEAL AND PLEURAL ABSORPTION.

DANDY and ROWNTREE (*Annals of Surgery*, April, 1914) in an exceedingly interesting communication on this subject show that there is very active absorption of fluids from all parts of the normal peritoneal and pleural cavities.

This absorption is essentially hemic and not lymphatic.

They have quantitatively determined the absorption of fluids in both cavities in the four postures.

Peritoneal absorption is practically equal in all postures except pelvis-down, in which it is 15 per cent less than in the others.

Pleural absorption is practically equal in all postures except pelvis-down, in which it is 13 per cent less. The explanation of these findings the authors are unable to give.

The visceral peritoneum undoubtedly plays an important part in absorption—probably a more active part than the visceral pleura.

The writers have no evidence to support the view that there is an intraperitoneal current to the diaphragm.

There is no evidence in favor of the claims that the central tendon or the diaphragm as a whole performs more than its proportional amount of peritoneal absorption.

Gravity has a decided influence upon the localization of fluids—rapid in the pleural cavity, much slower in the peritoneal cavity. The intestines delay and influence the gravitation of fluids in the abdominal cavity.

From the above they conclude that though Fowler's position as originally instituted was based upon entirely fallacious and disproven grounds, there is herewith adduced evidence of a different character, perhaps sufficient to justify the resort at times to this postural method in the treatment of acute diffuse peritonitis. The above results tend also to support the employment of Coffey's lateral modification of Fowler's position.

SOME USES OF FAT IN SURGERY.

BINNIE (*Surgery, Gynecology and Obstetrics,* March, 1914) advocates the use of a fragment of omentum as a means of tamponing wound of the liver. Moreover, free omental flaps are useful after a difficult cholecystectomy, seeming to have a distinct hemostatic effect. After myomectomy the sutured uterine wound may be covered with a plaster consisting of a free flap of omentum held in place by a few stitches. This graft aids in preventing any oozing of blood. The omental grafts placed over intestinal wounds to prevent leakage of intestinal contents are methods of peritonealization and depend for their value entirely on their fibrous tissue constituents and peritoneal covering.

Rehn found that forty-five days after a cranial defect had been filled with fat a clear and distinct basal connective tissue sheet spanning the dural defect had developed in the transplant. Binnie reports a similar case.

Many otherwise beautiful faces are deformed by depressed scars adherent to underlying bone. If through a suitable incision the adhesions are thoroughly divided, and if then (after hemostasis is attained by pressure) a suitable mass of fat is gently insinuated through the cut to fill up the depressed area, an ideal result may be obtained. Autoplasty or homoplasty is advisable since heteroplasty commonly fails. After excising the breast cosmetic results may be obtained by transplantation of fat. Thus Czerny, who had occasion to remove one breast and a lipoma from the back of the same patient, instead of discarding the lipoma planted it in the bed left by the mamectomy and obtained a good result. Judd implanted a mass of omentum at the site of the mamectomy with gratifying cosmetic results. Klapp has implanted pieces of the patient's fat obtained from the thigh. From one of these patients a morsel of the implant was obtained after the lapse of four months.

The cavity left in the bone may be obliterated by the implantation of non-pedunculated masses of fat.

Krabbel, from a study of ten cases in Garré's clinic, comes to the following conclusions:

In chronic osteomyelitis without fistula, implantation of fat has made good. If fistulæ are present implantation is contraindicated.

Sharply delimited, easily accessible tuberculous foci are suitable for fat implantation, even when they are situated near the articular ends of the bone. Diffuse tuberculous lesions of bone and wide-spread disease of the soft parts may only be plugged (with fat) after the most careful and accurate removal of all the disease. If healing per primam does not ensue promptly, or if a fistula forms, the implanted fat must be removed at once, because of the grave danger of tuberculosis developing in the implant.

Chaput reports the case of a woman from whom he had removed an osteomyelitic focus eight years previously, and in whom he had plugged the bone cavity with a free flap of fat. After eight years of

good health a new focus of disease developed near the site of the old lesion, and the necessary operation permitted demonstration of the satisfactory healing in the bone of the transplant of fat made eight years previously.

Experiments show that it is almost always possible to close aseptic bone cavities with free flaps of fat, even when these cavities communicate with joints. The fat is sometimes changed into connective tissue; sometimes it persists, but the plug is always surrounded by a new-formed layer of compact bone derived from the walls of the cavity.

In any operation where an infective focus is excised from a bone and the resulting cavity is to be plugged with any suitable material, it is important to operate in a well-ordered, rather formal, systematized manner. Operation may be carried out somewhat as follows: (1) Remove all evidently diseased or infected tissues and sterilize the wound with pure carbolic acid, neutralized afterward with alcohol (Harrington's solution or pure formalin solution may be used). Pack the wound with gauze. (2) Let the surgeon and assistant put on clean gloves. Prepare the region of the wound as if for a new operation. Using freshly sterilized instruments, remove the pack from the wound and with chisel or burr cut away a layer of bone from the walls of the osseous cavity. Once more chemically sterilize the cavity and wash away the chemical with salt solution. Pack the cavity. Once more change gloves and instruments. (3) Obtain a mass of fat of suitable size, preferably from the patient himself. Do not touch the fat transplant with the fingers, but lift it in forceps with the least possible trauma. Remove the pack from the bone cavity. Completely fill the bone cavity with the fat transplant. Close the wound without drainage.

The formation of artificial joints is greatly favored by the interposing of soft living tissue between them. Free fatty fascial flaps seem to answer best.

After tenorrhaphy or neurorrhaphy it is very important to prevent the line of union from becoming closely adherent to neighboring structures. There is no better prophylactic measure than wrapping a free or pedunculated flap of fat around the part to be protected.

In bronchiectasis Tuffier has successfully grafted voluminous masses of fat between the mobilized parietal pleura and the ribs.

A SIMPLE METHOD FOR THE INDIRECT TRANSFUSION OF BLOOD.

Moss (*American Journal of the Medical Sciences,* May, 1914) obtains blood from the donor by means of an aspirating apparatus, and its defibrination by shaking in a flask with glass beads; he introduces it intravenously into the patient.

When 200 Cc. of blood have been obtained the flask is gently removed without disturbing the needle in the vein, another flask is substituted, and the aspiration continued as before; meanwhile the first flask is closed with a sterile rubber stopper, and an assistant immediately defibrinates the blood by shaking it vigorously for ten minutes, a circular motion being used.

A second and a third flask of blood are obtained and treated in the same way; 600 Cc. of blood should yield 500 Cc. of defibrinated blood.

The optimum amount of defibrinated blood for an adult seems to be about 500 Cc.; for children, 200 to 300 Cc.

The donor should be a person in vigorous health of approximately normal blood count and hemoglobin percentage. No one having an elevated temperature or recently convalescent from an infectious disease should be used. It is also unwise to use a nephritic patient.

It seems desirable, where possible, to select a donor who belongs to the same group as the patient, as determined by the isoagglutination reaction, in order to prevent the possibility of agglutination or hemolysis.

Moss states that he has used it in the last three years in about 75 cases. There was but one fatality which could be ascribed to the transfusion, the patient dying nine

hours after in coma. This patient suffered from pernicious anemia of a severe grade, with renal and cardiac insufficiency. It may not be altogether fair to ascribe this fatality to the transfusion, as a week or ten days previous to the transfusion the patient had been in coma for about forty-eight hours, from which, however, he rallied.

In most of the cases the introduction of the blood was followed in from fifteen minutes to one hour by a chill of about a half-hour's duration. This was accompanied by an elevation of temperature usually reaching 102° to 104° F., or even higher. The gain in the blood count following the transfusion of 500 Cc. of blood varied between 1,000,000 and 2,000,000 cells, and subsequent observations indicated that the cells introduced live and functionate normally in the body of the recipient. No instance of blood destruction was observed where hemolytic tests were employed.

GONORRHEA IN WOMEN.

HARTZ (*American Journal of Obstetrics and Diseases of Women and Children,* April, 1914) in acute and subacute cases where vaginitis or vulvitis is present directs his patient to use one teaspoonful of liquor iodidi compositus (U. S. P.) to 2 quarts of warm water as a douche twice daily. In the chronic inflammatory cases the strength is gradually raised to one or two teaspoonfuls until the patient begins to experience a burning or smarting sensation indicating the limit of increase.

The cervix was the most frequent site of lodgment of the gonococcus, and because of the deep penetration of the organism into the cervical glands it was found quite difficult to eradicate them. These patients are treated twice weekly through a bivalve speculum, Lugol's solution of full strength being carried in on a cotton-tipped applicator after removing the mucus. A saturated solution of iodine crystals in pure phenol was used in making applications to the cervical canal in the more obstinate cases. Involvement of Bartholin's glands was cured, when the ducts were patulous with pouting, red orifices, by one or two applications of phenol solution. Lugol's solution applied to the dilated orifices of the suburethral follicles effects a cure in most instances; for the thickened and infiltrated urethra with enlarged follicles along the course of the canal, dilatation of the urethra by means of Hegar's dilators, with light massage of the follicles over the dilator, and with subsequent instillation into the urethra of a solution made up of iodine crystals 5 grains and albolene 1 ounce. The solution should be retained in the canal from three to five minutes. The results in a small series of cases seemed to the author to justify the following conclusions:

In gonococcal infections of the lower genital tract, iodine is a valuable agent in the treatment. It offers a more rapid, more thorough, and a more permanent improvement in the patient's condition than most other methods commonly in use.

Gonococci disappear early from the secretions.

Intrapelvic extension is far less frequent.

The use of the cautery and strong caustics is obviated, and hence less scarring results.

The constitutional condition of the patient improves as a result of the early cessation of the profuse discharge.

The rapid improvement and lack of pain noticed by the patient encourages her to continue with the treatment.

The entire course of treatment is of comparatively short duration, but little burdensome to the patient and physician, and lends itself readily both to dispensary and private practice.

WHY THE UTERUS SHOULD NOT BE CURETTED.

WELTON (*Long Island Medical Journal,* March, 1914) proposes a substitute for curettage, with the report of 208 cases thus satisfactorily treated. The method of using the substitute is as follows:

The patient prepared, the cervix is held by a gut rope and is dilated. In all cases,

except the cervix be widely dilated, first a dressing forceps should be used, then a small dilator, and lastly a large dilator. During dilatation the instrument is rotated slowly in such a way as to equalize the pressure on all parts. By "ironing" the cervix and using different sized dilators little or no injury is done to the cervical canal. After the uterus is dilated strips of gauze, from 6 to 8 inches long, are soaked in a 50-per-cent tincture of iodine. A strip of the iodinized gauze is introduced into the uterus with the aid of a uterine sound. This is left about a minute, removed, and another strip of the iodinized gauze introduced. As a rule from five to eight strips of gauze are used. When a drain is required the last strip is left in the uterus. This is removed, as a rule, in about eight hours.

In postpartum and abortal cases in which material is in the uterus and a sapremic condition is present, even in the face of temperature, the iodinized gauze is used as described above, with the exception that from two to five strips of gauze at once are introduced and retained. Then securing the ends with a clamp the gauze is twisted and gradually withdrawn. This process is repeated from two to four times. (First material in the uterus is removed as completely as possible with ring clamps. This is done without traumatizing the cavity of the uterus.)

As a final step one strip of the iodinized gauze is left in the uterus as a drain. In all cases in which this method was used the author had a movable uterus.

The 50-per-cent tincture of iodine has several advantages. It is readily absorbed into the tissues, whereas the official tincture is not. In cases of endometritis it does the work which the curette was originally supposed to do. In atonic conditions and subinvolution before the process is finished the uterus contracts.

It is an antiseptic, and if infectious microörganisms are present either in the uterus or the vaginal tract the iodine renders them harmless. It does not necrose the tissue and does not get into the tubes as some authors have claimed. In three cases the author did not use the gauze, but injected the iodine with a syringe. Later opening the abdomen he failed to see any evidence of iodine in the tubes. He has had cases following labor and abortions with retained material and a temperature of 104°. The method described was carried out, and within eight hours the temperature fell to normal or one degree above normal.

THE ROLE OF THE CRUCIAL LIGAMENTS IN HEMARTHRUS AND INJURIES TO THE KNEE.

CORNER (*The Lancet,* May 9, 1914) demonstrates the case of a young man who injured his knee by playing football. The pain, tenderness, and source of disability are placed without hesitation on the inner side of the knee. The rest of the knee is apparently normal and without pain. Thus at a glance the diagnosis is clear; partial rupture of the internal lateral ligament of the knee—partial only and not complete, as the knee does not allow of the leg being abducted at that joint. At the site of the lesion the outlines of the internal condyle of the femur and the tuberosity of the tibia are obscured by a tender swelling—extravasated blood around the ruptured fibers of the ligament. On asking the patient if the knee swelled up after the injury, he answered: "Yes, but to no great extent and within a short time of the accident, an hour or two."

As the swelling of the joint took place so soon after the accident there can be no doubt that the fluid within the swollen joint was in large part blood. Where can this blood have come from?

The internal lateral ligament was only partially torn, and the synovial membrane of the joint is loosely attached there. Hence the synovial membrane would not have been torn with the ligament. Was the synovial membrane torn by the movement of the internal semilunar cartilage? The extreme localization of the pain to the side of the joint says "No" to this. Had any movement of the cartilage marked enough

to tear the synovial membrane taken place, pain would have been felt much more anteriorly, to the front and side of the joint, and the swelling of the joint after the accident would have been greater. Where, then, did the blood come from? And why was so easily torn a structure as the internal lateral ligament only partially ruptured? The true reason is that the tearing of the lateral ligament was stopped as the strain began to be taken up by the strong crucial ligaments inside the joint. These latter ligaments withstood the strain, and the internal lateral ligament was only partially and not completely ruptured. Indeed, complete rupture of the internal lateral ligament of the knee is impossible without a complete rupture of the crucial ligaments, or at least a complete rupture of the anterior crucial ligament.

Hence in lateral strains, sprains, or stresses of the knee it can be formulated: (1) Partial rupture of the internal lateral ligament is produced by the crucial ligaments withstanding the strain of the accident and preventing complete rupture. The results of treatment will be satisfactory. (2) Complete or severe lacerations of the internal lateral ligament will always be accompanied by a lesion of the crucial ligaments, even to the complete rupture of the anterior crucial ligament. The results of treatment vary *pari passu* with the extent of the laceration of the crucial ligaments. The convalescence may be long and the final result unsatisfactory.

The author states he has spent so much time upon the injury to the crucial ligaments to demonstrate and insist on their almost universal presence in cases of injury to the knee. So that a further statement may be made. The synovial membrane of the knee is tightly bound down to these crucial ligaments, so that when the ligaments bear strain and are stretched the synovial membrane on them is torn, not in one place, but as many small tears. These tears are the main source of blood in the joint after an injury—cases of hemarthrus. Hence it is found with regard to the patient under consideration—where the crucial ligaments withstood the strain and were not broken, and where the synovial membrane would be but little torn—there was but little early swelling of the joint after the accident. Little blood was poured into the joint as the synovial membrane was little torn. How different this clinical picture is from that of the man who, as was proved by operation, ruptured his anterior crucial ligament. That man's joint swelled up enormously and quickly after the accident. Also the tenderness on the inner side of his knee extended so far forward that a lesion of his internal semilunar cartilage was suspected, the unoffending cartilage being removed at Malta. He is an example of the extremely unsatisfactory result of treating the ruptured internal lateral ligament and excluding all treatment for the coexisting injury to the crucial ligaments—a fact noted by Mr. A. M. Martin, of Newcastle-on-Tyne.

Such reasoning as the above explains the relationship to each other and to injuries of the knee of partial rupture of the internal lateral ligament, complete rupture of the same ligament, partial or complete rupture of the crucial ligaments, and the source of blood in the knee-joint after injury. These have many consequences, but the one at present worthy of notice is that very little reference has been made to them in clinical observations or injuries to semilunar cartilages. These cartilages move and bear stress in all movements of the joint. But operation, and probably removal of the semilunar cartilage, is not a "cure-all" for troublesome conditions found in knees which have sustained injuries. The popularity of this operation suggests that such may be the opinion, and that this operation is done with as small amount of forethought as is so often given to the operations for the removal of an appendix, varicocele, or hernia sac. The postoperative benefit in these cases is often due to some postoperative stiffness giving the joint an appearance and feeling of strength.

Clinically there is a lesson to be learned. If the early post-traumatic swelling of a joint is slight and symmetrical, there is

little intra-articular injury and the patient will do well. If the early post-traumatic swelling of the joint is rapid and great there is an important intra-articular injury (or injuries) to be found in the neighborhood of the crucial ligaments. The convalescence of such a case will be long, and the end results of any treatment short of operative unsatisfactory.

It may be asked how such an operation should be done. The answer is, through a median arthrotomy, splitting the patella longitudinally, the knee being flexed to expose the structures at the back of the joint. There is no need to wire the patella after this operation; the split rectus femoris and ligamentum patellæ are sutured.

And what is the time to operate? As soon as the post-traumatic bleeding has ceased and before any post-traumatic inflammation has begun—that is to say, if circumstances allow, operate a few hours after the injury. Murphy of Chicago likes to wait a few days after the injury. During this period he injects some formalin solution into the joint which "coffer-dams" the subsynovial lymphatics and so prevents any infection spreading from the joint.

THE INTENSIVE TREATMENT OF NERVOUS SYPHILIS.

Filney (*L. I. Med. Jour.*, quoted by the *Urologic and Cutaneous Review*, April, 1914) especially deals with that incipient class of nervous syphilis in which notwithstanding a complete absence of clinical symptoms there is a positive Wassermann both of the blood and spinal fluid. He calls this the golden opportunity for the institution of the modern treatment of syphilis.

Such cases if neglected may pass into conditions due to irritative or destructive lesions of the nerve tissue. Closely allied with these are the cases which not only give a history of luetic infection and have a positive Wassermann in serum and fluid, but in addition manifest some slight or transitory symptoms, such as lancinating pains, attacks of temporary exaltation, delirium or depression, nocturnal headache, irregular knee-jerks, irregular or light-stiff pupils, transitory palsies, vertigo, transitory aphasia or amnesia, and perhaps transitory but recurrent delusions. The uncertainty and fugacity of these symptoms permit little reason to believe that permanent, pathological changes have occurred in the brain or cord to cause them. That we are here dealing with an active syphilitic process and its effects there can be no doubt. Such cases as these, and those first mentioned, justify the recognition of a well-defined group which may be designated syphilis of the nervous system. The cases of this group are characterized by the presence of a positive Wassermann in the blood and a positive luetic reaction in the spinal fluid; they may or may not present neurological symptoms; they are not due to any destructive lesion of the nervous tissue.

A second group comprises cases in which a history of luetic invasion is obtainable and well-marked neurological symptoms are present, but the Wassermann reaction is negative in the blood and in the spinal fluid. Here the active syphilitic process has become attenuated or probably ceased altogether. It has, however, left in its trail permanent, irreparable destruction. To this type the term metasyphilis or after-syphilis may well be applied.

There is still a third group, intermediate between the first and second, which combines the main features of each. Such cases are of the metasyphilitic variety, since they present symptoms which are unmistakably due to destruction and degeneration of the nervous tissue, the repair of which cannot be expected. But, in addition to this, they also present a positive Wassermann in the blood and a positive luetic reaction in the spinal fluid indicating an active syphilitic process. They may for this reason be termed syphilometasyphilis. This latter terminology is admittedly crude and only tentative. It is suggested for the definite idea it conveys concerning the status of the disease and especially because of its value in prognosis and therapy.

By syphilis of the nervous system, therefore, is meant the active stage in which the

Wassermann is positive in the blood and the luetic reaction positive in the spinal fluid, while neurological symptoms are either entirely absent or transitory. This does not imply that no pathological changes exist, but that such changes, if present, have not destroyed the nervous tissues. Metasyphilis is the stage in which degeneration and destruction have already occurred, but the syphilitic process has ceased as shown by the negative Wassermann and a negative luetic reaction. Syphilometasyphilis applies to those cases in which nerve destruction has occurred and the active syphilitic process is still going on, as indicated by the positive reactions in the blood and fluid.

It will be seen that the standard by which any syphilitic involvement of the nervous system is here judged rests upon certain biological tests—*i.e.*, the Wassermann reaction in the blood and the luetic reaction in the spinal fluid. How much faith we may place in these tests will depend somewhat upon our general attitude. That they are open to debate as tests on many points is admitted. That they are subject to definite limitations is also known, yet their correctness is so nearly universally sustained that at present it would be the part of ultra-conservatism to question their validity. In this light the Wassermann reaction becomes the predominant factor in determining the status of any given case. From what has already been stated it will be evident that upon this basis many cases which have no clinical manifestations must be classed as syphilis, while a large number which unaided clinical diagnosis would recognize as syphilis, because of the symptoms, must be excluded from this category. This distinction has its clear prognostic and therapeutic value. Thus we may assure the patient who presents a positive luetic reaction in the spinal fluid, with but little or nothing symptomatic, that he may be protected against the progress of the disease and even cured. And, furthermore, it cannot be too insistently urged that such patients should submit themselves to the most approved methods of treatment. If the case be one of a definite metasyphilis it may be stated with confidence that no improvement can be expected and that no treatment will prove effective. To patients suffering from syphilometasyphilis the prognosis may be made that by appropriate treatment the active syphilitic process can be arrested, the progress of the disease checked, but no improvement assured in such symptoms as are due to the already destroyed nerve tissues. If such responsibility is to be imposed upon the Wassermann reaction we should first know to what degree and under what circumstances it may be trusted.

In twenty per cent of cases the Wassermann reaction of the blood is negative, while a positive reaction is given by the spinal fluid. In a few instances, with definite neurological symptoms, the spinal fluid has been negative and the blood positive. The cell count must be made at the bedside.

To get the best results from salvarsan in these cases, it must be used in repeated doses over a relatively long interval of time. The practical questions arising in connection with this therapy are: how large a dose shall be used—how often repeated—how long continued—and what form of the drug? As to the size of the dose, this will be largely governed by circumstances. In a patient whose tolerance is not known, it is well to start with a relatively small dose. If this is well borne, the dose should be increased up to tolerance. It is the author's present intention to get our patients up to .7, .8, and .9 gramme per dose of salvarsan. Smaller doses than .4 gramme may be necessary in some cases. The frequency of repetition will often be a matter of careful judgment. The author has established rather arbitrary intervals of two weeks between administrations. In many cases this period is too long, and in all it is certainly the outside limit. Intervals of four days are advocated by some writers, and there have been seen no ill results and some apparent benefits from these closely-placed treatments. Judgment will be required particularly as to the tolerance and urgency of the case, the gravity of the symptoms, and the condition of the patient being, in

general, the best guides as to the interval between doses. Very important is the question of how long to continue this intensive treatment. The answer to this is to be found in the Wassermann reaction. Frequent tests of the blood and spinal fluid must be made, and so long as the Wassermann is positive, or there is a complete or partial luetic reaction in the spinal fluid, the treatments should be continued. With reference to what form of the drug should be employed, the general consensus of opinion now favors salvarsan in preference to neosalvarsan.

In selecting the avenue by which to administer the drug, there are two, the intravenous or the intraspinous route. If the intravenous method is employed, the solution will undoubtedly reach the central nervous system. Its technique is simple and may be performed with but few precautions and little equipment. To influence a luetic process in the brain or cord, it is probable that large doses are necessary at very short intervals. The second, or intraspinous, method is considerably more complicated, and at the same time it appears to have the advantage of bringing the salvarsan into direct contact with the nervous tissues, and of combining this with the intravenous method.

The writer concludes his paper with these suggestions:

That all cases showing definite or indefinite neurological symptoms not otherwise explainable, should be considered under suspicion.

That such cases once under suspicion for any reason whatsoever require a complete serological examination of the blood and spinal fluid. The examination of the blood alone is not sufficient for the requirements of a complete diagnosis.

That either a positive blood Wassermann and a positive complete luetic reaction in the fluid, or a positive complete luetic reaction alone, or a partial luetic reaction and a positive blood Wassermann, is a certain indication of an active syphilitic process in the central nervous system which calls for intensive treatment.

That the Wassermann test to be reliable must be in the hands of an expert and must be the long method.

That the best therapeutic results are to be obtained from the intensive, mercurial, salvarsan treatment; that salvarsan is most efficient if given intraspinously, although it may be effective by the intravenous method; that such treament will probably yield better results if administered by an organized force trained to coöperate in the details of the procedure; that the treatment should be continued until the luetic reaction and blood are negative; and that all cases answering to the types here described as syphilis and syphilometasyphilis of the nervous system should have a conscientious and impartial trial of this intensive treatment.

VACCINATION EFFICIENTLY PERFORMED.

Under this title Cody (*Boston Medical and Surgical Journal,* March 12, 1914) contributes an article of general interest, describing a number of vaccination methods from sources which may be considered authoritative.

Rosenau is quoted as follows: Incision, sharp needle—really a scratch. Vaccine, that licensed by the government. Two insertions are made, each about three-quarters of an inch long, and about one inch apart. Dr. Rosenau is emphatic for incision and says that scarification is discouraged as dangerous; that it is forbidden by law in Germany.

Emerson advises scarification, after which a drop of vaccine is applied and allowed to dry. Thereupon gauze and adhesive tape dressing are applied. Two scarifications are made.

As to the technique of the War Department, the area is cleansed with green soap, then alcohol; dried with cotton or gauze; abrasions made by scraping or scratching on the selected area. Abrasions, three, one inch apart. Instrument, ivory point or sterile scalpel. Dressing, sterile gauze, preferably, sometimes vaccine shield. Dressing changed as often as necessary to keep it clean and in good condition; if the vaccination is successful the second dressing is

always sterile gauze. Source of vaccine, large manufacturers of the country. If primary vaccination fails, the process is repeated in a reasonable time, and is again repeated if the second attempt fails. In practice, practically all men upon enlistment and reënlistment are vaccinated.

The Navy Department prescribes no uniform technique.

The Public Health Department agrees that the best method of vaccination is the simplest, and hence scarification is advisable. Vaccination shields are avoided and aseptic bandages are used. The arm having been dressed after the operation, the patient should return in seven days, or earlier, should constitutional or severe local symptoms appear. The dressing should be removed and the physician look for "a section of a pearl on a rose leaf." If present a bland ointment with sterile dressing is applied, and in this manner the lesion is cared for until it is dry. If the vesicle has not matured and a mere scratch remain, if we revaccinate the patient in a week or two we may expect to see at the site of the first attempt an awakening which runs a short course synchronously with the second inoculation, through local anaphylaxis.

When the scar is seen then may a certificate of successful vaccination be given, and not until then. A vaccinated patient should be under the observation and guidance of the vaccinator until all chance of coccogenous infection is past.

BACTERIAL TRANSMUTATION.

Rosenow (*Boston Medical and Surgical Journal,* May 28, 1914) has recently made noteworthy and valuable contributions to this fascinating and important problem of the transmutation of bacterial species. In his recent paper in the *Journal of Infectious Diseases,* he first refers to the work of investigators in the problem of the transformations among the various strains or types of streptococci, and then gives the results of his own extensive experimentation and observation. Five different microörganisms were employed in these experiments. They were the strepococcus viridans, the streptococcus hemolyticus, the streptococcus mucosus, the streptococcus rheumaticus, and the pneumococcus.

The extent of his observations can be judged from the fact that they comprised the following: Culturing of the microörganism under varying favorable and unfavorable conditions, with a study of the morphologic biochemical and virulent properties of the various strains of cocci employed. The organisms were cultivated in various and widely different environmental conditions, such as, for instance, cultivation in an atmosphere varying from pure oxygen to complete absence of oxygen, in media with a salt concentration varying from hypertonic to hypotonic, at temperatures slightly above and slightly below the normal body. Various body fluids, such as ascitic fluid, urine, sterile milk, and others, were employed. Furthermore, the various microörganisms enumerated above were grown in symbiosis with other organisms, within the cavities and circulating blood of living animals. Still further, the organisms used in this extensive series of experiments were obtained or isolated from a great many widely different sources, including tonsillitis, arthritis, erysipelas, puerperal sepsis, pneumonia, and others. The bacteria so obtained were subjected to the various experimental environmental conditions mentioned above.

As a consequence of this work Rosenow found the following results: Apparently complete transmutation of each of the various members of the streptococcus-pneumococcus group to one or the other of the rest of the group was accomplished *in vitro.* So complete was the transformation in some of the strains that it was found to be so by every test known. Thus the transmutation into another type of organism and the identity of the latter were proved by the morphologic and biochemical characteristics, the fermentative powers, presence or absence of capsule, solubility or insolubility in bile and sodium chloride solutions, the behavior toward the respective broth culture filtrates (Marmorek's test), and the specific immunity response as proved by the

production of specific opsonins and agglutinins, and the more or less specific pathogenic powers as evidenced in the ability to produce characteristic lesions when inoculated into animals. For example, strains corresponding to hemolytic streptococci were converted into typical pneumococci, as determined by all the tests enumerated, and *vice versa*. In other words, the streptococcus was transformed from one strain to another and to a pneumococcus, and *vice versa*, as proved by morphologic, cultural, agglutinating, pathogenic, and other properties.

It has thus apparently been demonstrated that one species or race of bacteria can be transformed or transmuted into another. A new species of bacteria, a new race of microörganisms, has been developed by the modification of certain environmental conditions. Rosenow further noted that the various strains with which he experimented seemed to have a more or less specific affinity for certain specific structures in the body, one attacking the joints with the production of arthritis, another the lining of the heart with resulting endocarditis, another the muscles, producing myositis.

As Rosenow points out, this work was started by others before him, and no doubt anticipated by still others before them, since it was fully appreciated that differentiation and specialization of function was here at its minimum, inasmuch as in dealing with bacteria we have to do with the very lowest forms of life.

The importance of these findings for bacteriology, epidemiology, medicine and biology, are not yet fully appreciated by many. But Rosenow ventures to say that the fact that variations in oxygen tensions and salt concentrations, that growth in symbiosis with other bacteria, and that injections into body cavities in animals, commonly produced mutational forms in streptococci, suggests strongly that similar changes might occur in various foci of infection where such conditions may prevail. "It would seem, therefore," he declares, "that focal infections are no longer to be looked upon as merely a place of entrance of bacteria but as a place where conditions are favorable for them to acquire the properties which give them a wide range of affinities for various structures."

THE USE OF THE HIGH-FREQUENCY SPARK FOR THE RELIEF OF PROSTATIC OBSTRUCTION.

BUGBEE (*Medical Record*, Feb. 14, 1914) on the basis of eighteen cases gives certain indications for the use of the high-frequency spark.

The cases of benign prostatic obstruction which are suitable for this method of treatment are as follows:

Small fibrous prostates, which form a hard ring about the vesical neck, not only constricting the internal urethral orifice, but interfering with the function of the internal vesical sphincter muscle.

Elevations of the median portion of the gland in the form of a bar, an elevation of the trigone, or more or less distinct median lobe, without general enlargement of the prostate.

Irregular prostatic lobes, narrowing the vesical outlet, or nodules of prostate left after incomplete prostatectomy.

Enlargement of the prostate of whatever size and form, where open operation is refused or contraindicated by the condition of the patient.

The method consists in the destruction of prostatic tissue, by direct contact with the high-frequency spark, the current being applied by means of an insulated wire (usually No. 5, steel) introduced into the bladder through the cystoscope, in the same manner as originally employed by Beer, in the destruction of vesical papillomata.

Previous to the introduction of the cystoscope, the mucous membrane of the bladder and urethra is rendered anesthetic by the instillation of a solution of four-per-cent novocaine, in 1-to-16,000 adrenalin, which is allowed to remain in the bladder for one-half hour.

The cystoscope that the writer has found most satisfactory for this work is the No. 18 F. indirect, close-vision instrument, made by Wappler, and called by him "the 1911 model." This cystoscope is of a comfort-

able size, gives a good field, is easy to manipulate, and renders work at close range possible, so that it can be used in the urethra as well as about the vesical neck. The irrigating cocks are convenient. He has had no trouble with short-circuiting, even with the high-frequency cystoscopic currents both turned on.

The wire, introduced through this instrument by means of the deflector, is held tightly against the tissue to be destroyed, and the current turned on. The strength of current varies with the amount of tissue to be destroyed. As a rule a 1/10-inch spark in the muffler is sufficient, and the spark should be tested before using the current in the bladder. The wire is usually allowed to lie in position until the bubbles cease to form. This usually requires about one minute, and is a long enough application for one area. The destruction of tissue for this length of time, with the current stated, extends about one-fourth inch below the surface.

As many applications should be made as the patient can take without causing severe pain or too deep destruction of tissue. The application of the spark causes the feeling of being pricked with needles. Pain is often absent and seldom acute, and disappears as soon as the current is turned off. With the application of the current the insulation burns off the wire, necessitating the withdrawal of the wire after each application, cutting it off flush with the insulation and reintroducing. The field fills with bubbles, requiring the injection of an ounce or more of fluid through the side-cock, which clears the field at once. Bleeding is almost never seen, if manipulations are carefully executed.

It is better to have several sessions, even eight or ten, destroying a little tissue each time, giving the patient very little pain, no after-irritation, no bleeding, and not incapacitating him, rather than to make each treatment too extensive, thus giving rise to the above disagreeable features.

Immediately following the application, if the wire is withdrawn, one sees a distinct excavation, with ragged, grayish walls. This gray tissue comes away in small shreds and flakes, a little at a time, and does not leave an ulcerated surface. When the dead tissue has entirely passed off, an apparently smooth, healthy surface is seen—a depression in place of the former elevation. The writer has seen no infection in these areas. It requires about ten days for all the tissue from a single burning to come away. The treatments should be repeated until the obstructing tissue has been destroyed, the intervals varying in each individual case. It has not been necessary in any of the cases to confine the patients to bed after the applications, but occasional bladder irrigations are desirable.

This method has every advantage over the operations, such as open incision and stretching of the vesical neck; the cautery operations of Bottini, Goldschmidt, and Chetwood; and the intraurethral punch operation of Young.

The advantages are that the cause of the obstruction is removed, under the eye, without pain, reaction, infection, loss of function, hemorrhage, or incapacitating the patient. There is no ulcerated surface left, hence no cause for cicatrization.

THE PROVOCATIVE WASSERMANN REACTION.

PEASE (*Medical Record*, May 30, 1914) notes that it has been conclusively shown that in less than 30 per cent of primary syphilitics reaction can be obtained during the first week of the disease, and at the end of the fifth week nearly 20 per cent of undoubted cases are still negative. In the secondary stage of syphilis from 90 to 95 per cent of the cases are positive, the variations in the figures depending on the type and severity of disease, the treatment, and, to a certain extent, upon the technique used. If the treatment has been inadequate the higher figure will be approximately correct, leaving about 5 per cent of negative reactions in the secondary stage not accounted for by the Wassermann test. In the tertiary stage of cases having symptoms from 85 to 90 per cent are positive, while in the latent stage the number of positives fall off to about 65 per cent. These last cases present no symptoms, and in most instances the test

is made to determine whether or not the disease has been cured.

It will be noted from these statistics, which have been gathered from many sources, that it is possible to have a negative Wassermann reaction at any stage of syphilis, even though symptoms are present and it is possible to demonstrate the presence of living spirochætæ in the open lesion. A second test is demanded in all stages of syphilis after a weak positive. This second test should be made after a more or less brief interval. Under certain conditions there are a few diseases which tend to give a weak positive, but it is the common opinion that a full positive reaction in a non-syphilitic case is at the least suggestive of imperfect technique and demands a second application of the test. A single negative reaction is of no value in excluding syphilis, and it is only when such a reaction has been obtained on repeated examinations, extending over a period of at least a year, that it can be considered as good evidence of the absence of the disease. Even under such circumstances it is well to have the result corroborated by the luetin test and the provocative Wassermann test.

It is perhaps unfortunate that luetin is not within the reach of every physician, for it is a test of no little delicacy in the later stages of syphilis, and is simple in its application. The provocative Wassermann, however, apparently gives even better results than the luetin test in the late stages of syphilis, and besides has a wider usefulness in that it is applicable to primary, secondary, and tertiary conditions that give a negative reaction to the ordinary Wassermann test.

The test is carried out with 0.4 gramme of salvarsan or 0.6 gramme of neosalvarsan. The blood should be taken immediately before the injection and on several following days. It has been found that the test is most apt to become positive on the two following days, but occasionally does not appear for seven or more days. A fairly safe rule for obtaining specimens is to take the blood during the forty-eight hours immediately following the injection and again after seven and fourteen days.

It has long been known that in a syphilitic a negative Wassermann could be converted into a positive one by an injection of salvarsan. Gennerich and Milian in 1910 first suggested that advantage be taken of this fact for diagnostic purposes, but it is only recently that the possibilities of a provocative Wassermann have interested more than a select few of the profession. An analogous effect to the provocative Wassermann is seen in the so-called Herxheimer reaction—or the accentuation of the clinical symptoms of the disease immediately following treatment with salvarsan. The "provocative" Wassermann can be obtained in every stage of the infection; in the early chancre stage, before the ordinary Wassermann reaction is positive, a provocative Wassermann may be very strong. A negative in the secondary stage may be changed into a positive provocative test. It is, however, in the tertiary and latent stages of syphilis that the reaction is of most value. The probable explanation of the test is that when the spirochætæ are killed their toxic action is temporarily increased with a corresponding increase of the bodies concerned in the Wassermann reaction. It is fair at the present time to assume that a positive Wassermann indicates the presence of living spirochætæ, and therefore a positive provocative test is proof that the patient is not cured and needs further treatment.

The test has a real place in the diagnosis of certain obscure cases of syphilis and as emphasizing the now accepted fact that treatment may change a negative Wassermann into a positive one. The test appears to be fully as reliable as the luetin test, so far as any conclusions can be drawn from these cases in which both tests were made. The indications for a provocative Wassermann test are (1) a doubtful positive reaction, and (2) a negative test in the presence of a history or symptoms which point to a syphilitic infection. As has already been stated, a positive Wassermann indicates the presence of living spirochætæ, and therefore a negative provocative Wassermann reaction is the best evidence available at the present time of the actual cure of syphilis.

REVIEWS.

CLINIQUE ET THERAPEUTIQUE CIRCULATOIRES. Par Le Dr. Alfred Martinet. Illustrated. Masson & Cie., Paris, 1914. Price 12 francs.

This volume follows several others written or edited by the same author during the past few years, all dealing with therapeutic subjects, including drugs, foods, the general management of the sick, and the utilization of various general and special physical agents in the treatment of disease.

The present book of 592 pages, divided into two parts, constitutes a presentation of various methods of investigating and treating certain conditions affecting the cardiovascular system.

The first part deals with the use of various instruments of precision, and the technique of laboratory examinations, which the author considers of value in the estimation of circulatory conditions. The theory and use of the Pachon oscillometer are discussed at length. The technique of determining the viscosity of the blood is considered rather fully. There is a short chapter on hydrometry. The electrocardigraph, the von Jacquet and Mackenzie polygraphs, and the Marey syphygmograph, are shown in illustration, their use briefly discussed, and examples of records made with each are shown. There is no attempt to discuss the interpretation of tracings so obtained, the reader being left to gather this information from other sources. The *x*-ray as a method of investigating cardiac conditions has a chapter devoted to it. Certain urinary examinations considered essential to the systematic investigation of diseases of the circulation, with a brief description of the Wassermann reaction, are included in the laboratory methods described.

Fourteen pages, profusely illustrated, are given to a description of Taylor's method of examination.

The second part considers a selected group of circulatory syndromes, particular emphasis being laid upon the relationship between arteriorenal sclerosis and high blood-pressure. Many interesting tables, showing various effects of hypertension, are given, together with a few polygraphic studies, the latter, however, being exhibited but not analyzed. The results of Janeway's studies on the causes of death in those exhibiting hypertension are quoted and discussed in four pages. The discussion of the treatment of hypertension, covering forty-four pages, is aided by the exhibition of ingenious tables arranged in a way different from those shown in American works. An endeavor is made to formulate the principles of treatment in accord with the more recent advances in the knowledge of arterial conditions, based upon clinical, laboratory, and instrumental examinations.

Hypotension, its causes, results, and treatment, are all very fully discussed in the same manner.

Adequate recognition is given to the importance of the cardiorenal syndrome. The author has taken pains, by means of tables and a number of coefficients, to show the association and interrelated dependency which exists in the development of pathological conditions affecting the heart, kidneys, and arteries, together with the resulting altered conditions in the blood and urine, found in conditions affecting these organs in various stages of development.

The chapter on the action of digitalis, its uses, favorable and untoward effects, illustrated by tables and tracings, is quite satisfactory.

Angina pectoris and aneurism are briefly considered.

The discussion of the cardiac arrhythmias is in accord with the most recent advances in cardiac physiology and pathology, disturbances of the various functions of the cardiac muscles being shown as the fundamental basis of the irregularities. The presentation is, however, brief, and treats the subject only slightly more fully, although more exactly, than is the case with

text-books in common use by American students.

The book cannot be regarded as a text-book upon diseases of the circulation, or even fully covering all that its somewhat pretentious table of contents would lead one to expect. Much of it is a brief and necessarily abridged compilation, and serves merely to bring together in one volume general information bearing on its title.

The discussion of blood-pressure instruments is confined entirely to the Pachon and Riva-Rocci instruments, and only the use of the first is illustrated.

There are many tables and charts containing a large amount of interesting information, some of which require close study for their interpretation, a fact to be accounted for, perhaps, because of their somewhat different arrangement from that to which American readers are accustomed. The discussion of the treatment of various conditions rests on a rational basis, and is abreast of the most recent advances.

As supplementary reading, the student, or beginner, will find much of value that is in advance of that contained in elementary text-books, although the work does not constitute a systematic and complete exposition of the diseases of the circulation, and the descriptions of the use of various instruments mentioned are not sufficiently detailed, or the interpretation of their findings sufficiently discussed, to be of great value to the student early in his studies of these diseases.

To those further advanced, much will be found that is of interest, but many pages and chapters will be omitted in the reading as being of too elementary or incomplete a character to be of interest. R. V. P.

A Treatise on Clinical Medicine. By William Hanna Thomson, M.D., LL.D. The W. B. Saunders Company, Philadelphia, 1914. Price, cloth, $5.00.

Students of medicine, and readers of medical journals, for many years past have become familiar with the teachings in clinical medicine of Dr. Thomson, whose span of activity in medical life has been long and active. Those who are familiar with his writings are also cognizant of the fact that his views are not always in accord with many of his contemporaries, but that this has never stood in the way of his boldly stating what he believes to be true.

As may be imagined from the title of this book, it is compiled in a manner which is somewhat unusual. On the one hand it might be considered that a suitable title would be "A Text-book of the Practice of Medicine," and, on the other hand, the title might be expected to cover the fields of diagnosis or therapeutics.

The introductory chapter deals with the mechanism of "catching cold;" another with the significance of common but important symptoms, such as pain, emaciation, cough, dypsnea, edema, and vomiting; and thirdly, there is a chapter upon remedies non-medicinal, medicinal, vaccine and serum therapy. As all three of these chapters in Part I of the book cover less than fifty pages, and the last one that we have named covers only eight pages, it at once becomes evident that it cannot be the intention of the author to deal with these subjects very exhaustively.

The balance of the book is devoted to the Infections, and we note with interest that the author has included amongst the infectious diseases locomotor ataxia, paresis, and gonorrhea. Syphilis is not placed amongst those infections which are communicable by inoculation, but amongst those which are directly communicable or contagious. This is possibly rather an artificial distinction. The last chapter in Part II is devoted to "Infections by the Bacillus Coli," which is an unusual way of dignifying this organism in view of the fact that the important acute infectious maladies are grouped together in earlier chapters.

Part III, which is by far the largest portion of the book, deals with diseases of special tissues or organs, such as the blood, the circulatory apparatus, the lymphatics, the bones and joints, and the organs of digestion. Curiously enough, in this part entitled "Diseases of Special Tissues or Organs" we find a chapter devoted to "drug habits" and "mineral poisons." So, too,

malignant disease of the thoracic and abdominal viscera has a chapter of its own, the last one in the volume, instead of this subject being included in the chapters upon the "Diseases of the Respiratory Apparatus, the Organs of Digestion," etc.

The book cannot be considered as one so designed as to be useful as a text-book for students, nor is it to be considered as a summary of medical knowledge to which the general practitioner may turn for general information. It is rather a presentation of the views held by Dr. Thomson as the result of many years of practice. The very first line of the first chapter perhaps gives a clue as to the attitude of the author, or the position which he occupies, in considering disease. It reads as follows: "Outside of hot, moist climates, the most common cause of disease and of death is from 'catching cold;'" and again: "It should be clearly understood that this disorder, however local, is always caused by an interference with the supply of arterial and not of venous blood to the parts."

TEN SEX TALKS TO BOYS. By Irving David Steinhardt, M.D. Illustrated. The J. B. Lippincott Company, Philadelphia, 1914.

Some months ago we called attention to the companion volume entitled "Ten Sex Talks to Girls." The chapters in this book consist chiefly of the material brought together by the author for public lectures given in New York.

We have often called attention to the difficulty under which a medical man labors when he attempts to write upon medical subjects in the language of the laity, and in such a way that he will not be misunderstood. There can be no question that the author has no fear of "calling a spade a spade." At times, however, it would seem that the author goes a little far in his endeavor, in a book devoted to boys, to a consideration of the opposite sex. For example, why there should be a series of questions of the following nature: "How can you promote modesty in women's dress?" "What dangers to the girl lurk in the use of paint and powder?" "How can you protect your sister from vicious male acquaintances?" "Discuss the dangers of kissing and its various phases." "How might dancing and bathing be made objectionable?" These are the questions which are appended to a chapter which at its close deals with the additional question, "What is the advantage of early life insurance?"

We expressed the view that in the "Sex Talks to Girls" of ten years and over there were some matters considered that were pretty far advanced, such as pregnancy. So, too, we think that a chapter in which directions are given as to how a baby should be dressed, and whether a "pacifier" should be used, may be considered as pretty far ahead for boys of ten years and over. These criticisms, however, are not to be taken in such a way as to discourage the purchase of this volume, if any medical man or layman wishes to obtain a book which deals very well, if boldly, with a field in which so large an interest is being taken at the present time.

CHEMICAL PATHOLOGY. Being a Discussion of General Pathology from the Standpoint of the Chemical Processes Involved. By H. Gideon Wells, Ph.D., M.D. Second Edition. W. B. Saunders Company, Philadelphia and London, 1914. Cloth, $3.25 net.

This new edition of Dr. Wells's book fulfils admirably the desire of the author to indicate in compact form the present status of the more important problems of chemical pathology. To the person who wishes to keep up with the remarkable advances which have been made in the last few years by the increasing application of chemical methods in the study of the manifestations of disease, an authoritative review such as this is almost essential. The present edition of the work has of necessity been revised throughout. The chapters dealing with immunity and related phenomena have been largely rewritten and are treated in the comprehensive manner which their importance deserves. The chapters on the ductless glands and on diabetes (the latter by Dr. Woodyatt) are also practically new. The introductory portion on the physics and chemistry of the cell and enzyme action has been brought up to date and will prove of value to those who are

not familiar with the latest view-points in physiological chemistry. The usefulness of the book is greatly enhanced by the numerous well-chosen references to original articles and to bibliographies of the various subjects. It is clearly printed and well bound. O. B.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles. Edited by Henry W. Cattell, A.M., M.D. Volume II, Twenty-fourth Series. The J. B. Lippincott Company, Philadelphia, 1914.

The current issue of International Clinics contains a series of articles on diagnosis and treatment, general medicine, surgery, obstetrics, and child welfare. The articles which probably will be read with the greatest interest are those upon the treatment of prostatism by Dr. Henry Wade; the surgical treatment of gall-stones by Dr. Lewis Frank; and that on blood transfusion by vein puncture method by Dr. William A. Steel. The chief article of clinical interest in the department of obstetrics is one upon "When and How to Apply the Obstetric Forceps," by Dr. Harry J. Philips.

LECTURES AND DIETETICS. By Max Einhorn, M.D. Paul B. Hober, New York, 1914. Price $1.00.

Whether it is ever wise for a physician, be he ever so clever, to publish lectures in book form is for each reader and author to determine. In this small volume of one hundred and fifty pages Dr. Einhorn presents the views which he has given in his lectures at the New York Post-Graduate Medical School. The text is divided into eight chapters. The first of these contains nineteen pages devoted to the principles of diet and nutrition. Then follows one of twenty-three pages upon the digestibility of foods and diet in health and in acute diseases. The third lecture, or chapter, discusses the diet in acute diseases of prolonged duration and in chronic diseases, and the fourth lecture deals with the diet in chronic affections of the digestive tract. The fifth lecture, however, may be considered as a subdivision of the fourth in that it deals with the dietetic treatment of chronic diarrhea. In the sixth chapter, which covers only twelve pages, the author endeavors to consider the dietetic treatment of diabetes mellitus. The ninth chapter is entitled "Diet régimes," and the last, as might be supposed from Dr. Einhorn's well-known interest in this subject, takes up the indications for, and the discussion of the method of, duodenal feeding.

BACTERIOLOGY FOR NURSES. By Isabel McIsaac, R.N. Second Edition, Revised. The Macmillan Company, New York, 1914. Price $1.25.

This may be considered as a story concerning bacteriology rather than a text-book which gives any definite methods as to technique or full descriptions of pathogenic organisms. The author has been wise in including in the text statements in regard to disinfectants and antiseptics which may be used to combat bacteria. She certainly cannot be accused of having gone too deeply into the subject for the class of readers for which she has prepared her text. Whether it is necessary for nurses, in the process of training, to have separate books dealing with this question must be left with those in charge of training schools to determine.

A MANUAL OF SURGICAL TREATMENT. By Sir W. Watson Cheyne, Bart., C.B., D.Sc, LL.D., F.R.C.S., F.R.S., and F. F. Burghard, M.S. (Lond.), F.R.C.S. New Edition, Entirely Revised and Largely Rewritten, with the Assistance of T. P. Legg, M.S. (Lond.), F.R.C.S. In Five Volumes. Volume V. Lea & Febiger, Philadelphia and New York, 1913.

The fifth and last volume of this admirable series of books deals with surgical affections of the Pancreas, Liver, and Spleen, with Surgical Affections of the Neck, with Affections of the Thorax and its Contents, with Affections of the Genito-urinary Organs. It is well illustrated, clearly and vividly expressed, and is most satisfactorily explicit and direct in regard to therapeutic indications and their exact application. Indeed, the volume offers a running comment on the surgery of the day. The chapter on Goitre is a typical example of the author's power of packing within a small space much meat, wisely discriminating between real knowledge and plausible hypotheses. A description, and a very good one, of modern instruments and their applications is, of course, an essential part in the chapter on Foreign Bodies in the Trachea, and may

be found here in most satisfactory detail. Affections of the Breast are somewhat briefly covered. It is satisfactory to find that in the technique of Breast Amputation removal of the fascia covering the upper portion of the rectus and the external oblique muscle is advocated. Moreover, extensive undermining of the remaining flaps is advised as a means of lessening the raw surface left after operation. In an exploratory puncture and aspiration for pleurisy the act of puncturing the skin with a narrow-bladed knife before introducing the needle should be insisted upon. This enables the surgeon to feel much more accurately when his needle has entered the cavity. Operation is advised against in case of tuberculous pyopneumothorax. The question of operating under differential pressure is taken up in some detail. In the treatment of tuberculosis the production of artificial pneumothorax is strongly advocated. Nitrogen is introduced into the pleural cavity, on the affected side, in sufficient quantity to collapse the lung and put it at rest.

For the treatment of Chancroids cauterization with nitric acid is advised. As to the treatment of involved glands the peri- and intraglandular injection of carbolic acid and other substances is not advocated, being regarded as both painful and inefficient. An ingenious cage is shown to which the testis can be hitched when it is brought down in cases of non-descent. Little is said concerning operation for relief of acute inflammation of the epididymis. It is satisfactory to note that castration is strongly condemned as a means of treatment for tuberculous epididymitis and orchitis. Both tapping, excision, and eversion of the sac are described as the proper means of treating the hydrocele. The method of securing in place an indwelling catheter is complicated and as usually applied inefficient.

In the treatment of gonococcal urethritis the abortive treatment is condemned. As a rule general treatment is advocated during the acute attack, and it is not until the stage of decline is reached that the local treatment is depended upon. Irrigations apparently have first choice. There is an unusually long and complete chapter upon Organic Stricture. The prostate is also taken up in some detail. In regard to vesical calculus the authors note many contraindications to the employment of litholapaxy and give a list of the accidents and complications which may follow from this, in skilful hands, extremely serviceable procedure. Under the treatment of tumors of the bladder should be mentioned the high-frequency current. The anatomy of the kidney is described, the methods of examination, abnormalities, ptosis, injuries, and finally the inflammatory affections. It is stated that the great bulk of kidney tumors are malignant sarcoma.

The book closes with an appendix on Operations on the Female Genital Organs, which may be found necessary in the course of an ordinary laparotomy.

This work is essentially practical, and has been written by men of large experience, who in the main are familiar with modern methods and have the discriminating judgment which enables them to pick that which is best. It is useful to both the surgeon and the practitioner.

THE PRACTICE OF SURGERY. Second Edition, Thoroughly Revised. By James G. Mumford, M.D. W. B. Saunders, Philadelphia and London, 1914. Cloth $7; Half Morocco, $8.50.

The fact that a second edition of Mumford's Practice of Surgery has been so soon called for attests to the value of this work, and it incidentally proves his somewhat original arrangement of subject-matter—*i.e.*, the discussion of surgical diseases in their order of interest, importance, and frequency—has, if it has not helped the popularity of his book, certainly not lessened it. In his efforts to present the practice of surgery as a surgeon sees it he has certainly met with a measure of success possible only to one who caps the powers of observation and discriminating judgment by a natural gift for writing, polished by long and careful use.

The first part of the book is devoted to the Abdomen, and logically and properly begins with Appendicitis. As to Ptosis, the author concludes that the human frame with its organs has not yet completely

adapted itself to the upright posture, and that to this fact are due many of the peculiar ills which distinguish human pathology from much that we see in the lower animals. The various parts of the book are devoted to the Genito-urinary organs, the Chest, the Face and Neck, the Head and Spine, and to Minor Surgery and Diseases of Structures, and correspond in grouping and arrangement with the accepted standards.

The illustrations are excellently adapted to their purpose—*i.e.*, the elucidation of the text. It is characteristic of the distinguished author that the picture opposite the title page should afford a contrast which in itself tells a story. There is first shown an old-time operating room representing the first public demonstration of ether anesthesia on October 16, 1846; below this the Bigelow amphitheater in the Massachusetts General Hospital operated under modern conditions.

To each student of modern surgery the whole broad subject as unfolded in a day's work presents different phases. Therefore no text-book can be written which will entirely suit any one individual in either the estimation of the importance of a given subject or in its final determination as to the relative value of various means of treatment.

Mumford's clarity of vision and force of expression are such that even when the reader disagrees in minor points he does so with an inner sense that perhaps the distinguished author is quite right.

CANCER OF THE BREAST. By Charles Barrett Lockwood. Henry Frowde and Hodder & Stoughton, London, 1913.

This book of some two hundred odd pages is designed to give the author's own experience in operating for cancer of the breast, nor is there much reference to the enormous literature on this subject.

After chapters devoted to Clinical Methods of Study, Morbid Anatomy and Pathology, and Surgical Technique, there follows a section on results, which might have been made valuable had it been complete. In accordance with the usual experience the operation mortality is low.

Hematoma has been avoided by the use of a large drainage-tube and necroses of the flaps by making the incision circular. Transitory edema of the arm was noticed in a third of the cases. Persistence of the edema is regarded an unfavorable sign. Neuritis characterized by pain was often a troublesome feature in convalescence.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

A new edition of the British Pharmacopœia is to be published shortly. The new book will contain many changes, and ought to be a considerable improvement on its predecessor. One noticeable feature will be the extension of the chemical standardization of drugs and the international unification of preparations of poisons. This last advance has received international support and approval at the Hague conference. No provision has been made for the physiological standardization of drugs, but this change will probably be introduced into the next edition, when further advances have been made in the technique of animal tests. The limits of impurity in drugs are also narrowed down in this new edition: for instance, tartaric acid will only pass the test if it contains less than ten parts per million of lead. The British Pharmacopœia is prepared and published by the General Medical Council, and pharmacists only possess a right to consultation in the preparation of the book by permission of the General Medical Council. They contend that they ought to be recognized by Act of Parliament as participating in the preparation of the Pharmacopœia, as the book is even more used by them than by members of the medical profession. Over 46,000 copies of the

last British Pharmacopœia, published in 1898, have been sold, and the new edition, though arranged by a Committee assisted by many able editors, has required several years of labor for its completion.

It seems probable that Westminster Hospital will at last make its long-talked-of removal to the South of London. The authorities of the hospital have received Parliamentary sanction for the removal, which will soon become a necessity, owing to the impossibility of enlarging the hospital on its present site. For some time past negotiations have been carried on, with a view of inducing St. George's Hospital to amalgamate with Westminster, and share the building of the new hospital. But the choosing of a site agreeable to both institutions has proved a stumbling-block, St. George's wishing for a river site at Wandsworth, while Westminster proposes to go to Clapham. Both the hospitals possess valuable sites at present, in commanding positions, and the sale of these will go toward the new buildings. In spite of this, it is estimated that an appeal for £100,000 will have to be made to the public to cover the entire cost.

An interesting report has just been issued by Major Greenwood of the Lister Institute on the present state of our knowledge of swine fever. It has been freely stated that considerable progress has been made in late years in stamping out the disease, but Major Greenwood does not agree that any reliable conclusions can be drawn from the official statistics, as no uniform method of diagnosis of swine fever has been followed. Since 1893 the diagnosis of swine fever has always been confirmed, or otherwise, by officials from the headquarters staff of the Board of Agriculture, but before that date the diagnosis was usually made by local officials, and it is thought that many cases diagnosed as swine fever were in reality not swine fever at all. Under these circumstances it is obviously difficult to say if the disease is on the increase or not. Concerning the immunization of pigs against the disease, Major Greenwood has come to the conclusion that "there is strong experimental evidence that both serum and serum and virus (simultaneous) inoculations enable treated animals to withstand infective conditions which prove fatal to the large majority of untreated animals." The simultaneous method mentioned means giving a dose of virus and a dose of antidote at the same time. Major Greenwood thinks that there is no reliable evidence to show that this method is liable to convey infection to healthy pigs, though its efficacy depends upon the successful counterbalancing of the dose of virus with the dose of serum. His experiments show that a vaccinated animal without symptoms of illness is no danger to others. If Major Greenwood's findings are confirmed, a considerable economy can be effected, as the present methods of isolation and destruction of infected herds are extremely costly.

In connection with the investigation of animal diseases, it may be noted that the Council of the Royal College of Veterinary Surgeons have made a proposal to establish a Diploma in Veterinary State Medicine. The diploma may have the effect of bringing human and animal medicine into closer relationship, as a greater importance would be accorded to the veterinary profession, and able men would be attracted to its ranks.

A comparative study of child health in town and country has been carried out by Dr. Fremantle, school and health medical officer for the county of Hertford. Comparisons have been instituted in urban and rural districts in close proximity, so as to eliminate the question of soil and climate, as far as possible. Village lads are found to be decidedly taller and heavier than town lads of the same age, but town and country girls weigh practically the same. On the other hand, the town children are found to have better teeth and to be less subject to "tonsils and adenoids" and ear diseases. Defects in eyesight are also worse in the rural schools, while mental defects are common in the towns. At each age of comparison defective nutrition was twice as common in the towns as in the country, though the town children are less liable to infectious and contagious diseases. As these conclusions have been deduced from the

15,000 reports reaching Dr. Fremantle's office yearly, they are worthy of consideration, and the next five-yearly report will give us a reliable indication of progress or retrogression in the health of children of school age.

The official report of the Inter-Departmental Committee on Sleeping Sickness has just been issued. The chief object of the investigation was to discover the part played by wild animals and the tsetse fly in Africa in the spread of the disease, and the committee were asked to say if they considered it advisable to attempt the extermination of wild animals in any special area, and also to advise on any other measures which might be taken in order to check the disease. The tsetse fly has been proved to be the carrier of infection in both forms of the disease, the epidemic type common in Uganda, and the non-epidemic but more deadly form found in Rhodesia and Nyasaland. The Uganda disease is caused by the variety of tsetse fly known as *Glossina palpalis,* which seems to be confined to the Uganda district and has never been found in Rhodesia or Nyassaland. This particular variety never goes very far from water. The other variety found in Rhodesia and Nyassaland, which has also been proved to be the carrier of disease, is known as *Glossina morsitans,* and this is capricious in its distribution and seems to be independent of water. This difference in habit necessitates a different method of attack in each district. It is thought that clearing the ground in certain areas would reduce the chances of infection in Uganda, while similar operations in Rhodesia would be much less effective, owing to the wide range of the *Glossina morsitans.* The committee came to the conclusion that it is impossible to decide at present if wild animals which are a reservoir of disease affecting domestic stock are a danger to man. They therefore think that any attempt to make a general destruction of wild animals is not justified in the present state of our knowledge, and that research work must be continued until the true solution of the problems of prevention is discovered.

The report of the American Research Committee on harmful radiations and the protection of eyesight has been received with considerable interest in this country. The new method of preparing thin screens of polished marble will be useful if not too expensive to be generally used, especially as the marble is said to be so translucent that it only absorbs one-fifth of the light from an electric lamp placed behind it. This marble is also said to absorb practically all the infra-red rays, which are now held to be as harmful as the ultra-violet rays.

The list of honors issued on the occasion of the King's birthday contains the name of Dr. W. P. Herringham, Vice-chancellor of the University of London, who has been knighted. This honor recognizes the services rendered by Dr. Herringham last year as Secretary of the International Congress of Medicine, the success of which was largely due to his efforts.

We regret to announce the death of Sir Francis Laking, the well-known royal physician. Sir Francis held the appointment of Surgeon-Apothecary to the Sovereign during three reigns, and was in constant attendance on King Edward during his last illness. He was *persona grata* with many members of the royal family, and they manifested their esteem for him by many marks of distinction. He was created a baronet by King Edward in 1902.